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CONTENTS

PROFIT-SHIFTING ACTIVITIES IN THE MINING SECTOR: EVIDENCE FROM THE CZECH REPUBLIC

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ABSTRACT

The aim of this paper is to measure the magnitude of profit shifting in the Czech Mining industry. The paper source data from AMADEUS provided by the Bureau van Dijk for the 10-year period 2005–2014 to seek evidence of profit-shifting activities and measure the magnitude. The paper applies panel regression model in the analysis to seek evidence and measure the magnitude of profit shifting using random effect model estimations. The paper therefore analyses tax effects on capital structure of subsidiary firms as a means of profit shifting and the results was that, there is substantial evidence of profit shifting with different magnitudes in separate model specifications.

KEY WORDS

profit shifting, multinationals, Czech Republic

JEL CODES

H260

1 INTRODUCTION

The issue of international taxation and multinational tax planning has for some time now been gaining an unprecedented degree of political salience and public attention (Dharmapala, 2014). Several studies have tried to define tax planning but in simple terms Schäfer and Spengel (2004) defined it as the systematic inclusion of tax effects in the overall corporate planning decision making process with the objective of planning the company's activities in a way that effective tax rate is minimised without impairing the economic development of a company or underachieving possible changes of success. Economic theory assumes that the goal of all firms is to exist to maximise profit (Jensen and Meckling, 1976; Teece, 1982; Rumelt and Lamb, 1997; Shepherd, 2015; Liu et al., 2015). In other to achieve such a goal, MNCs employ mainly two basic strategies, increasing revenue and reducing cost, to maximise profit,

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but since revenue flowing into the company is not guaranteed, they therefore devise strategies to control costs. Tax liability however also forms a major component of the cost composition of MNCs, and thus various tax planning strategies are used to reduce the tax to be paid.

There are several techniques MNCs used to engage in tax planning; that is shifting profits from high-tax countries to low-tax countries. One method which an MNC can use to shift profit is by manipulating its transfer prices for both international and intra-firm transactions (Cristea and Nguyen, 2014). Also, another method which can be used is that the multinational can affect the international allocation of accounting profits through its financial structure: when they assign (high-interest) debt to high-tax locales the multinational firm can reduce its worldwide tax bill (Huizinga and Laeven, 2008). Another way is when the multinational re-assigns common expenses to high-tax countries, resulting in a reduction of accounting profits in these countries (Huizinga and Laeven, 2008). When MNCs engage in tax planning a possible motive is shifting profits to erode the taxable base to locations where they are subject to more favourable tax treatment (OECD report, 2013) and a reduction of both corporate tax and withholding tax in the source country. It is on this issue that G20 members had committed themselves to fighting against when they endorsed the OECD's *action plan* against base erosion and profit shifting (BEPS).

The available empirical literature on base erosion and profit shifting (BEPS) has mostly concentrated on Europe and the U.S. (Hines, 1997; Hines, 1999; Devereux and Maffini, 2007) where the scope has also been on a country or multi-country level. There is however a gap in the focus at industry level. The aim of this paper therefore is to measure the magnitude of profit shifting by using data from a single industry sources contrary to previous papers where the subject matter has been based on the use of large multi sector and industry data.

2 METHODS AND DATA

This section indicates the data used for this study as well as the method and strategy used to identify profit shifting in the mining sector in the Czech Republic.

2.1 Data

In this study, the data on multinational mining companies was taken from the Amadeus database compiled by Bureau Van Dijk. The Amadeus database provides data on the financials, employees and ownership structure of private and publicly owned European firms as well as on their ownership relationships. The ownership structure data contained in Amadeus helps us to identify the ownership structure of the company. We define a firm as a subsidiary if the owners own at least a total of 50+1 percent of the total shares. In our selection of data from Amadeus, we restricted ourselves to the mining sector in the Czech Republic and we selected foreign subsidiary companies which meet our category. The mining sector was considered purposely because the industry contains quite substantial foreign-owned companies. The companies which fell under the mining industry are those involved in the mining of coal and lignite, the extraction of crude petroleum and natural gas, the mining of metal ores and other mining and quarrying activities. Other control variable data such as GDP, unemployment rate, exchange rate and inflation rate were taken from the World Bank database. Also, the corporate tax rate of parent and subsidiary companies were taken from the OECD corporate income tax rate database. In all, 24 companies were considered in this study for a period of 10 years over 2005–2014.

2.2 Identification Model

As reported by Dischinger (2010), only a few papers have used transfer pricing and estimations of deviation from arm's length prices

to find evidence of profit shifting (Dischinger et al., 2014; Clausing, 2015; Bernard et al., 2006). However, this study investigates whether multinational companies take advantage of the corporate tax differentials between the host country and the home country by using the pre-tax profits.

Research designs commonly used in the estimation of profit shifting literature are directly derived from early writers on the topic of multinational profit shifting and tax planning, namely Grubert and Mutti (1991) and Hines and Rice (1991). The most frequently used model is the Hines-Rice approach, from which several specific models are derived. Following this line of argument, this study will use HR analysis to investigate income shifting.

This approach can be represented by the following equation:

$$\begin{aligned} \mathrm{PBT}_{it} \quad = \quad & \beta_0 + \beta_1\,\mathrm{TAXDIFF}_{it} + \\ & + \beta_2\,\mathrm{CAP}_{it} + \beta_3\,\mathrm{LBR}_{it} + \\ & + \beta_4\,\mathrm{XA}_{it} + \beta_5\,\mathrm{XM}_{it} + \\ & + \rho_t + \phi_i + \epsilon_i. \end{aligned} \tag{1}$$

The basis of the HR approach to the identification of profit shifting is that the observed profit before tax (indicated in the model as PBT) which can be seen on the face of an income statement of an affiliate, represents the sum of "true" income and "shifted" income, where the latter can be either positive or negative (Dharmapala, 2014).

In firm theory, capital and labour inputs are used to generate true profit. The variable CAP_{it} defines the affiliate i's capital inputs (a proxy by fixed tangible assets) and LBR_{it} also defines the affiliate i's labour inputs (proxied for instance by employment compensation). The inclusion of capital and labour inputs in the model is to predict the counterfactual "true" level of income (Dharmapala, 2014). Conversely, Dischinger (2014) suggests that the inclusion of labour and capital does not significantly affect the coefficient estimate of the tax differential. The coefficient of interest β_1 is used to identify the shifted profit and the tax incentive to move profit in or out of the affiliate.

The variable $\mathrm{TAXDIFF}_{it}$ is the statutory corporate tax rate difference between affiliate i and its foreign parent in year t. This tax differential is derived by subtracting the parent tax rate from the subsidiary tax rate; XA_i is a vector of additional affiliate-level controls which are made up of affiliate's sales revenue (SAREV), financial leverage (LEV), net asset turnover (NAT) and firm size (SIZE). The paper also includes macroeconomic shocks indicated in the equation above as XM_{it}. These variables include GDP, GDP per Capita, Inflation rate, unemployment rate and exchange rate. Variable ϵ_i is the error term; β_0 is the constant and β_1, β_2, β_3, β_4, β_5 are the parameters of the independent variables. In this study, we expect $\beta_1 < 0$ to arrive at evidence of profit shifting. Variable ρ_t represents the year's dummies which control for shocks over time which affect all affiliates while unobserved characteristics on the firm and economy levels are represented by ϕ_i.

The panel nature of our data allows us to use a panel regression where the Hausman test is applied to help identify the appropriate model for this study. The above model's definition of profit shifting is also consistent with earlier models by Hines and Rice (1991), Hines (1999), Devereux and Maffini (2007), Huizinga and Laeven (2008), Klassen and Laplante (2012), Dyreng and Markle (2016), Dharmapala and Riedel (2013) and Merz and Overesch (2016).

3 RESULTS AND DISCUSSION

3.1 Evidence of Profit Shifting

We first perform a panel regression analysis for the period 2005–2014. The Hausman specification test was conducted, which helps us to identify that the Random Effect model is the appropriate one for this study. We regress various specifications with a combination of variables using the Random Effect model. Our basis for finding evidence of profit shifting as

Tab. 1: Evidence of profit shifting, random effect model – dependent variable: profit before tax (PBT ln)

Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
CAP (ln)	−0.000225	−0.0602	−0.219	−0.148	−0.325
	(0.131)	(0.141)	(0.339)	(0.300)	(0.492)
LBR (ln)	0.897***	0.996***	0.713**	0.0735**	−0.346
	(0.163)	(0.177)	(0.407)	(0.414)	(0.623)
TAXDIFF	6.095*	5.039	8.656**	6.993**	4.909
	(2.773)	(2.819)	(3.233)	(2.465)	(3.275)
SAREV (ln)			0.136	0.111	1.648*
			(0.142)	(0.144)	(0.653)
LEV (ln)			−0.844***	−0.001	−1.181***
			(0.217)	(0.0027)	(0.279)
SIZE (ln)			0.0839	0.0179	−5.729*
			(0.813)	(0.186)	(0.186)
NAT (ln)			0.417	0.00437	(2.815)
			(0.217)	(0.0121)	(0.342)
GDP (ln)		0.686		−0.0511	−2.978
		(0.546)		(0.33)	(2.249)
INF (ln)				−0.663*	−0.354
				(0.305)	(0.835)
UNEMP (ln)				−0.235	−5.094
				(1.646)	(5.217)
EXR (ln)				12.84	−75.60
				(8.76)	(54.48)
GDPCAP (ln)		25.96		2.64	−12.48
		(24.04)		(5.206)	(52.76)
_cons	−1.811	−0.117	29.98	−96.5	30.76
	(1.096)	(0.42)	(27.33)	(98.22)	(27.43)
N	240	240	240	240	240

Note: The numbers in the parentheses indicate standard errors, * indicates a 10% significance level, ** indicates a 5% significance level, and *** indicates a 1% significance level.

used in the literature is that we expect the coefficient β_1 of the variable $\text{TAXDIFF}_{it} < 0$. We defined the variable TAXDIFF_{it} as the statutory corporate tax rate difference of affiliate i to its foreign parent in the year t.

In column (1) using the random effect model, we regress the variable of interest (TAXDIFF_{it}) with capital (proxied by fixed tangible assets) and labour inputs (proxied for instance by employment compensation) where the coefficient was expected to be negative showed a positive value indicating zero evidence of profit shifting in our results as shown in Tab. 1. These estimated results in which no evidence of profit shifting goes contrary to the results obtained for instance by Huizinga and Laeven (2008) and Dischinger (2010) who all found evidence of profit shifting using the same method. From Tab. 1, we estimated the Random Effect model of the tax difference to the parent together with other variables, but none of them resulted in evidence of profit shifting.

In column (2), we estimated only the control variables of capital inputs (log of fixed assets), labour cost (log of cost of employees) together with the tax difference with the parent and GDP, GDP per Capita which resulted in a positive higher coefficient of 5.0. This result seems very far from evidence of profit shifting. Again in column (3) which was the main point of interest, other variables such as the sales revenue of the firm (SAREV), the size of the firm (SIZE), net asset turnover (NAT) and leverage (LEV) serving as proxy for debt ratio were added to the model estimation as firm-level variables. Our main concern was to achieve

a result of a negative (−) coefficient of the tax difference to parent variables. It rather tends to be a positive significant value of 6.146 indicating zero evidence of profit shifting in the mining sector of the Czech Republic according to the sample of data used and the years under consideration and the same results runs across column (4) and (5).

The random effect results of this paper are not in line with the results of Dischinger (2010), in which the coefficient of the interest variable of tax difference to parent was a significant value of −0.735 as evidence of profit shifting. Dischinger (2010) used data from AMADEUS and employed a panel study for the years 1995 to 2005, while controlling for unobservable fixed firm effects on a sample of EU 25 member states (except for Cyprus and Malta) for the years 1995–2005. Our inability to obtain evidence of profit shifting activities may be a result of the small sample of data used as well as the focus on one industry and in one country. This calls for a broader scope when trying to find evidence of profit shifting.

3.2 Effect on Capital Structure

In further analysis, we analyse tax effects on capital structure of subsidiary firms as a means of profit shifting by employing leverage (LEV) as our dependent variable in the regression analysis. The regression results of this further analysis is depicted in Tab. 2. The pecking order theory states that it is appropriate for companies to finance investment projects by first using retained earnings and then follows with debt which is associated with a non-tax impact on profitability (Myers and Majluf, 1984).

Extant literature indicates that firms with high pre-tax profits prefers to use debt as a profit shifting mechanism because of deductible interest in order to reduce tax. This argument is supported with evidence found by Bartoloni (2013) and Loretz and Mokkas (2015). Before the results is discussed it is important to note our selection of control variables is in line with Frank and Goyal (2009) who identified that capital structure determinants must include among others firm size and inflation. The results are shown in Tab. 2.

In this analysis, we first start by regressing the tax difference of the subsidiary host rate to the parent tax rate with capital and labour inputs using leverage as our dependant variable. According to our results, we find evidence of profit shifting in column (1) with a high coefficient for the tax rate of 30.65 which means the leverage ratio of a subsidiary in the Mining industry falls by about 30 percentage point if the host tax rate increases by a percentage point. Similar results are found in column (2) and (3) with coefficients of 48 and 53 respectively when the variables of GDP and inflation are included to the model. In column (4), again we included firm level variables of size and net assets turnover and from our regression results in Tab. 3, we found evidence of profit shifting with the coefficient of 1.20. In comparing the magnitude of our tax effect in column (4), the magnitude of our evidence is higher. For instance, Feld et al. (2013) found evidence of 0.27 percentage point by employing a meta-analysis of 48 existing studies on the relationship that exist between capital structure of firms and taxation. Other empirical evidence which are consistent with our results include that of Keen and de Mooij (2012) and Heckemeyer and de Mooij (2013) who all found a magnitude of evidence of tax effect on capital structure.

4 CONCLUSION

The issue of international taxation and multinational tax planning has for some time now gained an unprecedented degree of political salience and public attention. Several methods (both direct and indirect) have been used to detect activities of profit shifting in different jurisdictions and most of these studies used large country data or cross country data as the sample for their work. This paper used prime data from AMADEUS on a single industry

Tab. 2: Effect on capital structure, random effect model – dependent variable: leverage

	(1)	(2)	(3)	(4)
CAP (ln)	−1.565	−1.706	−1.632	−0.264
	(3.080)	(4.091)	(4.598)	(0.232)
LBR (ln)	0.0877	0.144	−0.0869	0.183
	(3.864)	(5.144)	(5.812)	(0.242)
TAXDIFF	−30.65	−48.71	−57.47	−1.203
	(36.05)	(47.68)	(54.53)	(1.648)
GDP (ln)		−15.26	−48.41	−3.103**
		(18.36)	(52.05)	(1.013)
INF (ln)			7.17	−0.263
			(15.37)	(0.387)
SIZE (ln)				0.0629
				(1.007)
NAT (ln)				0.0561
				(0.110)
_cons	11.17	3,026.8	4,567.9	271.6***
	(6.242)	(1,885.3)	(2,753.1)	(59.94)
N	240	168	144	106

Note: The numbers in the parentheses indicate standard errors, * indicates a 10% significance level, ** indicates a 5% significance level, and *** indicates a 1% significance level.

(the mining sector) in one country (the Czech Republic) for the 10-year period 2005–2014 to seek evidence of profit-shifting activities.

This paper therefore applies the method identified by the early writers in its analysis and the result was that zero (0) evidence of profit shifting was identified in the estimations using the random effect model. However, a further analysis which analyses tax effects on capital structure of subsidiary firms as a means of profit shifting found substantial evidence of profit shifting with a magnitude of 30.65 percentage point. In another model specification, the results indicated evidence magnitude of 1.20.

These results seem to suggest that using a small sample of data to find evidence of profit shifting is difficult and it rather requires a large sample of national data, across an industry or across a country. However, in a further analysis, this paper finds evidence of profit shifting by analysing the tax effect on capital structure in the Czech Mining industry.

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6 ANNEX

Tab. 3: Descriptive statistics for variables

Variable	OBS	MEAN	STD. DEV.	MIN	MAX
PBT	240	3.832	3.616	−2.56	11.934
CAP	240	6.282	3.974	0	12.666
LBR	240	4.907	3.173	−1.889	9.597
SAREV	240	6.622	4.031	−3.250	13.234
LEV	240	4.020	46.404	0	718.627
SIZE	240	6.909	4.0158	−1.926	13.218
NAT	240	2.649	10.594	0	121.474
TAXDIFF	240	−0.074	0.088	−0.201	0.26
GDP	240	0.868	0.721	0	1.928
GDPCAP	240	10.210	0.093	10.012	10.348
INF	240	0.598	0.745	−1.087	1.849
UNEMP	240	1.868	0.164	1.482	2.067
EXR	240	4.548	0.075	4.403	4.631

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THE RULE OF LAW AND ECONOMIC GROWTH IN THE BALKAN STATES

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ABSTRACT

The main aim of the paper is to evaluate whether the rule of law affects economic growth in the Balkan states. The reference period is the period 2000–2015 due to data availability. As indicators of the legal environment the Rule of Law Index (the Worldwide Governance Indicators) and Property Rights Index (the Index of Economic Freedom) are employed. The paper uses panel data regression analysis (OLS with fixed effects) for the purpose of identification and quantification. The results indicate that improvement of the rule of law has not statistically significant effect on growth in the Balkan countries. On the other hand, the higher level of property rights might support economic development in the countries, but simultaneously the positive changes prove to be in five-year horizon.

KEY WORDS

transition economies, economic growth, rule of law

JEL CODES

K11, O11, P26

1 INTRODUCTION

The relationship between the rule of law and economic development is frequently discussed within (new) institutional economics. The Balkan countries, with the exception of Greece, executed the very similar historical development after the end of World War II when they were included into the Eastern Bloc. Within the Balkan states we can identify two groups. Relatively successful economies (Bulgaria, Croatia, Romania and Slovenia), which have executed economic and political transformation, and the rest economies, which are lagging behind. Slovenia has executed the most successful transformation and has reached the same level as the developed market economies. Other relatively successful countries

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(Bulgaria, Croatia and Romania) have become members of EU, but on the other hand the institutional environment has been suffered from persisting problems in the economies. The low level of institutions is characteristic feature of the remaining states. And there is the principal question of the paper to what extent the newly established formal (legal) institutions have affected economic development in transition economies.

The main aim of the paper is to evaluate whether the rule of law affects economic growth in the Balkan states. The literature review provides a survey of the current empirical literature. The regression analysis, used proxies and a sample of the observed countries are described in Methodology. The Results includes a panel data regression analysis with using fixed effects models. Conclusions summarises the major findings.

2 THEORETICAL BACKGROUND

The paper is based on the new institutional economics, which it means that we consider institutions to be a key factor in economic growth. Institution is a wide term with many different definitions. North (1990, p. 3) defines institutions as a *"set of formal rules (rights, laws, political system, markets, etc.) and informal rules of conduct (norms, traditions, religions, etc.) that facilitate coordination or govern relationships between individuals and groups"*, in short *"humanly devised constraints that structure political, economic and social interactions"* (North, 1994, p. 360). Hodgson (2006, p. 2) adds that institutions *"are systems of established and extended social rules that create human interaction"*. Dixit (2009, p. 8) characterised formal institutions as *"rules of the political game of governance"*, whereas informal institutions *"enable information searches, define behaviour norms and sanctions for violations"*.

The aim of the new institutional economics is to *"explain institutional factors, their development and effect on economic output, efficiency and distribution"* (Kherallah and Kirsten, 2002, p. 111). Well defined institutions form an environment supporting economic activities and economic development, whereas extractive institutions lead to economic stagnation (Acemoglu and Robinson, 2012). The democratic system and compliance with the rule of law are two characteristics which affect economic performance. Also, there are two other areas, protection of property rights and corruption, which are associated with rule of law (Butkiewicz and Yanikkaya, 2006). In developing countries informal institutions contribute to the formation of formal institutions and to the functioning of markets (Casson et al., 2010).

If we focus on the influence of the rule of law (formal institution) on economic growth, Haggard and Tiede (2011, p. 674) state four theoretical channels: *"mitigation of violence, protection of property rights, institutional checks on government and control of private capture and corruption"*. In more detail, personal protection is essential to the protection of property rights. The low level of rule of law is related to negative economic consequences (e.g., anarchy, extortion and private predation), whereas good protection of property rights leads to stable long-term economic growth. Simultaneously only independent justice and institutional checks on government can ensure enforcement of property rights and decrease risk of expropriation. The control of corruption is the last channel. If subjects cannot rely on equal treatment by the courts, it means the courts cease to be reliable and independent institutions for dispute resolution, then subjects are forced to return to the expensive option of private enforcement. Rent-seeking and corruption increase costs for producers and consumers. The both characteristics cause distortions and produce barriers (e.g., emergence of monopolies, restrictions on market entry, protectionism and bad reallocation of government resources) to long-term economic growth (Acemoglu and Robinson, 2012).

In accordance with Haggard and Tiede (2011), the paper is focused on rule of law

(general view) and protection of property rights (essential part of legal system). The other two areas (institutional checks on government and corruption) are omitted due to range of the paper. According to Pere (2015) good governance indicators (rule of law and political stability) have a positive impact on capital formation to GDP and economic growth in the Balkan countries. In case of transition economies Beck and Laeven (2006) state similar results. Concurrently Pere (2015, p. 38) adds that economic performance of the Balkan states is also highly influenced by internal (economic convergence) and external (development of global economy) factors. To sum up the topic has not been sufficiently investigated in case of the Balkan states yet.

3 METHODOLOGY

The chapter is divided into three parts. First of all, a sample of countries and econometric methods are described. Then the individual explanatory variables are introduced. Finally, the regression models are presented.

The paper is focused on the nine Balkan states, namely Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Montenegro, Romania, Serbia and Slovenia. Kosovo is not included due to data availability.

Influence of formal (legal) institutions on economic performance within the Balkan states is quantified through panel data analysis. The paper omits pooled OLS, because the method does not take structure of panel data and influence of the individual unobserved effects into consideration. Therefore, we prefer standard static panel data methods, it means fixed and random effects. We use the Hausman test for the determination of a suitable method (random effects are preferred under a null hypothesis while preference for fixed effects is an alternative hypothesis). We assume the employment of fixed effects, because economic and institutional proxies change over time, especially in the case of the transitional economies. Durlauf et al. (2005, pp. 627–636) describe the advantages and disadvantages of regression models with fixed effects in the context of economic growth.

Econometric verification is carried out by testing the occurrence of the unit root (the Fisher-type test and the Im-Pesaran-Shin test)[1], homoscedasticity (the Wald test) and serial autocorrelation (the Wooldridge test). Drukker (2003) and Wooldridge (2010) selected the tests. The reference period is the period of 2000–2015 due to data availability. The short time span limits the results, because it does not enable the evaluation of the long-term effects of the rule of law on economic growth. To sum up, the regression model contains only 9 cross-sectional and 16 time units.

As the dependent variable in the following regressions, Growth (annual percentage growth rate of GDP per capita, constant 2010 prices $; the World Bank Group, 2017a) is employed. The explanatory proxies are divided into three groups, used proxies in basic model, additional control variables ensuring robustness of results and two institutional indicators representing rule of law.

3.1 Explanatory Variables

The regression model is based on the augmented aggregate production function (Barro, 1991; Mankiw et al., 1992) with specific application (Pere, 2015). In accordance with the authors the basic regression model comprises four proxies, GDP per capita (constant 2011 international $, logarithmic form), Investments (gross fixed capital formation, % of GDP), Government (general government final consumption expenditure, % of GDP) and Trade (sum of exports and imports, % of GDP). The World Development Indicators database (the World Bank Group, 2017a) is used as data source

[1] Compared to the Levin-Lin-Chu test, both tests do not require strongly balanced panel data and have a null hypothesis, that is, all the panels contain a unit root. Tests include the time trend and lags structure (1).

for all proxies in basic model. In accordance with Barro (1991) and Haggard and Tiede (2011), we consider GDP per capita to be initial conditions (proxy for economic development; lagged values in regression analysis) and three variables as input factors (gross fixed capital formation, government final consumption expenditures and integration into internal trade). Within the literature dealing with economic consequences of institutions there are several very similar regression models, e.g., Bonnal and Yaya (2015), Durham (1999) and Sandalcilar (2013).

The robustness of results is ensured through incorporation of three additional control proxies into the basic model. There are Expected years of schooling (UNDP, 2017), Polity Score (value is difference between the Institutionalised Democracy and the Institutionalist Autocracy according to methodology of the Polity IV Project; Marshall et al., 2014) and Economic growth in OECD countries (average economic growth in OECD member states; the World Bank Group, 2017a). The first two variables are standard control proxies which represent two important prerequisites of economic growth, human capital and democratic arrangement. Therefore, the variables are lagged by one year. While the third proxy is based on assuming that economic development of the Balkan countries, as relatively small economies, is affected by the economic growth in developed countries (Pere, 2015).

Within evaluating and measuring of the legal system the paper employs two institutional indicators. The first represents general view (the Rule of Law Index of the Governance Matters) whereas the second, the Property Rights Index (the Index of Economic Freedom), expressing the essential part of legal system. The both expressions are in accordance with Haggard and Tiede (2011) whilst Beck and Laeven (2006) and Pere (2015) use only the first mentioned proxy. We consider the indicators of institutional quality for prerequisites therefore the institutional proxies are lagged by one year and five years. Using five-year lags proceeds from theory (e.g., Williamson, 2000).

The Rule of Law of the Governance Matters[2] captures *"perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence"*. The index has range from −2.5 (the worst level) to 2.5 (the best level; the World Bank Group, 2017b).

According to the Heritage Foundation (2016), the protection of property rights *"give citizens the confidence to undertake entrepreneurial activity, save their income, and make long-term plans because they know that their income, savings, and property (both real and intellectual) are safe from unfair expropriation or theft"*. The proxy, Property Rights, consists of five sub-factors (Physical property rights, Intellectual property rights, Strength of investor protection, Risk of expropriation, Quality of land administration) and the index has range from 0 (government expropriation of property is likely) to 100 (legal protection of property is maximally effective).

3.2 Regression Models

To sum up, there is basic model (equation 1) which is subsequently extended by three additional variables due to ensuring of robustness test (equation 2). The logarithmic form is used for GDP per capita. Institutional proxies are single added-to benchmark regressions in order to avoid the problem of multicollinearity. Likewise, the additional control variables are tested one by one. The regression models are following:

[2]The Governance Matters evaluates level of governance in 215 economies. The index includes six dimensions of governance, voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption. For more detail, see Kaufmann et al. (2011).

$$\begin{aligned}\text{Growth} &= \beta_0 + \beta_1 \log \text{HDPpc}_{i,t-1} + \\ &+ \beta_2 \text{Investments}_{it} + \\ &+ \beta_3 \text{Government}_{it} + \\ &+ \beta_4 \text{Trade}_{it} + \\ &+ \beta_5 \text{RuleOfLaw}_{i,t-1/t-5} + \\ &+ \mu_{it}, \end{aligned} \tag{1}$$

$$\begin{aligned}\text{Growth} &= \beta_0 + \beta_1 \log \text{HDPpc}_{i,t-1} + \\ &+ \beta_2 \text{Investments}_{it} + \\ &+ \beta_3 \text{Government}_{it} + \\ &+ \beta_4 \text{Trade}_{it} + \beta_5 Z_{i,t-1} + \\ &+ \beta_6 \text{RuleOfLaw}_{i,t-1/t-5} + \\ &+ \mu_{it}, \end{aligned} \tag{2}$$

where i and t are country and year indicators, Growth_{it} represents the economic growth proxy, $\log \text{GDPpc}_{i,t-1}$ is GDP per capita lagged by one year (logarithmic form), Investments_{it} is gross fixed capital formation (% of GDP), Government_{it} is general government final consumption expenditure (% of GDP), Trade_{it} is sum of exports and imports to GDP, $\text{RuleOfLaw}_{i,t-1/t-5}$ are two proxies representing the quality of legal system (Rule of Law of the Governance Matters, Property Rights of the Index of Economic Freedom) lagged by one year and five years, Z_{it} are additional control proxies ensuring robustness of results (Expected years of schooling, Polity Score of the Polity IV Project and Economic growth in OECD countries), μ_{it} is an unobserved error term.

4 RESULTS

First of all, the cointegration of unit roots was verified by the Fisher-type test and the Im-Pesaran-Shin test. The fixed effects method is chosen according to the results of the Hausman test.[3] The model incorporates heteroscedasticity (the Wald test) and serial autocorrelation (the Wooldridge test), therefore the robust standard errors are used (see Hoechle, 2007). The results are divided into two tables, in which the influence of the individual institutional proxies (Rule of Law and Property Rights) on economic performance is investigated. Robustness of results is ensured by two means; the basic model is gradually extended by three additional control proxies and simultaneously the institutional variables are lagged by one year and five years. Also lagging the institutional variables is one way to try to deal with the issue of endogeneity problem.

Tab. 1 shows results for the Rule of Law Index of the Governance Matters. If we focus on explanatory variables, three out of four proxies are statistically significant (GPD per capita, Investments, Trade). In case of additional control proxies, we can see that development of global economy (OECD countries) has significant influence and also level of democracy may have effect in five-year horizon. The regression coefficients can be interpreted that an increase in investments and growth in OECD countries of one percentage point leads to an increase in the growth of GDP per capita of about 0.28 and 0.81 percentage point. Provided the average economic growth in the Balkan states was 4.92%, it means growth of real GDP per capita is affected about 5.7% (investments) and 16.5% (OECD countries growth).

In case of rule of law, it seems to be that change in improvement of legal system does not lead to higher economic performance in one-year or five-year horizon. The last findings are contrary to Beck and Laeven (2006), Brunetti et al. (1997) and Pere (2015). On the other hand, in comparison with the mentioned authors, we use different period (2000–2015 compared to 1990s and 1996–2012) and more suitable regression method (fixed effects compared to OLS and random effects). If we consider the Balkan states to be developing countries, our findings are in accordance with Haggard and

[3] We reject the null hypothesis about the preference of random effects in favour of an alternative hypothesis about the preference of fixed effects. A χ^2 is 67.47 (p-value 0.00).

Tab. 1: Rule of law and economic growth in the Balkan states

	Rule of Law Index $(t-1)$				**Rule of Law Index** $(t-5)$			
OLS Fixed effects	**(1)**	**(2)**	**(3)**	**(4)**	**(1)**	**(2)**	**(3)**	**(4)**
Log GDP per capita $(t-1)$	−0.14***	−0.15***	−0.14***	−0.06**	−0.16***	−0.16**	−0.17***	−0.08***
	(−4.4)	(−3.2)	(−4.3)	(−3.2)	(−4.5)	(−3.3)	(−5.3)	(−5.5)
Investments	0.26***	0.26***	0.26***	0.27***	0.28***	0.28***	0.3***	0.3***
	(3.9)	(3.3)	(3.8)	(6.2)	(4.28)	(3.6)	(5.3)	(7.3)
Government	−0.36	−0.36	−0.35	−0.1	−0.36	−0.36	−0.2	−0.15
	(−1.8)	(−1.8)	(−1.7)	(−0.7)	(−1.7)	(−1.6)	(−0.9)	(−1.04)
Trade	0.07**	0.07***	0.07***	0.03	0.08***	0.08***	0.08***	0.04**
	(3.2)	(3.1)	(3.6)	(1.8)	(4.2)	(4.1)	(3.4)	(2.3)
Expected years of Schooling $(t-1)$		0.001				0.001		
		(0.24)				(0.1)		
Polity Score $(t-1)$			0.02				0.93***	
			(0.06)				(6.2)	
OECD countries growth				0.83***				0.81***
				(6.2)				(6.04)
Rule of Law Index $(t-1)$	−0.002	−0.001	−0.002	−0.01				
	(−0.12)	(−0.07)	(−0.14)	(−1.02)				
Rule of Law Index $(t-5)$					0.01	0.01	−0.001	0.01
					(0.4)	(0.5)	(−0.01)	(0.6)
N	142	142	142	142	134	134	134	134
R^2 (within)	0.52	0.52	0.52	0.71	0.56	0.56	0.61	0.74

Notes: (.) denotes t-statistic, */**/*** means a significance level of 10%/5%/1%; robust standard errors are included;
R^2 means adjusted (within) R-squared.

Tab. 2: Property rights and economic growth in the Balkan states

	Property Rights Index $(t-1)$				**Property Rights Index** $(t-5)$			
OLS Fixed effects	**(1)**	**(2)**	**(3)**	**(4)**	**(1)**	**(2)**	**(3)**	**(4)**
Log GDP per capita $(t-1)$	−0.14***	−0.15***	−0.14***	−0.07**	−0.14***	−0.14**	−0.14***	−0.07***
	(−4.5)	(−3.6)	(−4.5)	(−4.6)	(−4.7)	(−3.1)	(−4.8)	(−4.5)
Investments	0.25***	0.25***	0.25***	0.27***	0.26***	0.26***	0.26***	0.29***
	(3.5)	(3.3)	(3.4)	(5.4)	(3.9)	(3.5)	(3.94)	(6.96)
Government	−0.37	−0.36	−0.36	−0.12	−0.35	−0.35	−0.35	−0.11
	(−1.8)	(−1.8)	(−1.8)	(−0.9)	(−1.7)	(−1.8)	(−1.7)	(−0.8)
Trade	0.06**	0.06**	0.06***	0.027	0.07**	0.07**	0.07***	0.03
	(2.8)	(2.7)	(3.2)	(1.6)	(2.9)	(2.8)	(3.5)	(1.7)
Expected years of Schooling $(t-1)$		0.002				−0.001		
		(0.4)				(−0.03)		
Polity Score $(t-1)$			0.04				0.01	
			(0.1)				(0.02)	
OECD countries growth				0.82***				0.79***
				(6.1)				(6.3)
Property Rights Index $(t-1)$	−0.03	−0.04	−0.03	−0.03				
	(−0.5)	(−0.6)	(−0.6)	(−0.6)				
Property Rights Index $(t-5)$					0.08*	0.08*	0.08*	0.05*
					(2.03)	(1.95)	(2.05)	(2.13)
N	142	142	142	142	142	142	142	142
R^2 (within)	0.52	0.53	0.52	0.7	0.54	0.54	0.54	0.71

Notes: (.) denotes t-statistic, */**/*** means a significance level of 10%/5%/1%; robust standard errors are included;
R^2 means adjusted (within) R-squared.

Tiede (2011). To sum up, the Rule of Law Index does not explain differences in economic performance because the differences are given by the other factors (Pere, 2015).

In Tab. 2, there are results for the Property Rights Index of the Index of Economic Freedom. The index was selected because the paper considers protection of property rights to be essential part of legal system. We can see that the improvement of property rights protection has statistically insignificant effect on economic performance in one-year horizon, whereas there is positive significant impact in five-year horizon. The paper offers two explanations. First of

all, changes in formal institutions have long-run consequences (see Williamson, 2000). Secondly, the index has nearly time invariant character. The regression coefficients can be interpreted that an increase in quality of property rights of one percentage point leads to an increase in the growth of GDP per capita of about from 0.05 to 0.08 percentage point. Provided the average economic growth in the Balkan states was 4.92%, it means growth of real GDP per capita is affected about from 1.02% to 1.6% in five-year horizon.

5 CONCLUSIONS

The main aim of the paper was to evaluate the relationship between the rule of law and economic growth in the Balkan states. The main contribution of the paper is associated with the fact that the topic has not been sufficiently investigated yet. Also, contribution to discussion about economic consequences of the established institutions during transition period is purpose of the paper. The results indicate that the improvement of quality of legal system has not statistically significant effect on economic performance within the Balkan states. On the other hand, we can identify statistically significant positive impact of higher protection of property rights (according to methodology of the Index of Economic Freedom) in five-year horizon. In accordance with Pere (2015) the findings suggest that differences in economic performance are given by the other internal (convergence effect, capital formation) and external (integration into international trade and economic development in OECD countries) factors.

The relevance of results is limited due the short time period (16 years) which does not allow the incorporation of long-term effects. For that reason, the paper can offer very limited recommendations for policy makers in the Balkan countries, namely reforms of legal system should focus on improvement of property rights protection.

As a possible extension, we propose both comparison with the other post-socialist economies, which enables to generalise results in the context of transition economies, and incorporation of the other concepts representing quality of formal institutions. Also focusing on firm level seems to be promising for future research.

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HERDING BEHAVIOUR OF CENTRAL BANKS: FOLLOWING THE FED AND ECB

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ABSTRACT

I apply interest rate rules, especially the Taylor rule, to identify basic determinants of the central banks' decision-making process. The results confirmed herding behaviour related to the central bank financial assets and its economic power in the US and Eurozone. The conclusions are discussed in relation to the exchange rate movements and capital flows. The empirical strategy reflects different lag structure and employs autoregressive distributed lag models.

KEY WORDS

interest rates, Taylor rule, central banks, currency war

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1 INTRODUCTION

Interest rates, which are determined by the central bank, are crucial to the whole economy and important for each of us. High interest rates mean more expensive loans, people spend less, and the price level falls. Conversely, when interest rates are low, interest rates on loans are also low, people borrow more, spend more, and ultimately prices rise and unemployment falls. Also, interest rates affect the competitiveness of central banks. With the competitiveness comes the term currency war, or on other side, following of another bank.

After the financial crisis in 2008 banks began to be more active in their currency policy. The competitiveness of each state can be influenced by the interest rate in the open market. A change in the interest rate will affect the competitiveness of the country in direct proportion (Sánchez, 2005). With this is connected the term "currency war", which was made famous by Guido Mantega, former Brazilian Minister for Finance in 2010 (Darvas and Pisani-Ferry, 2010). Currency war is connected to Behavioural following. Many authors

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have been interested in the topic of currency wars – Ahamed (2009), Brown (2010), Reinhart and Rogoff (2010). Instead of wars many states can choose to follow another central bank. The question is whether to follow the ECB or the Fed. The ECB is simply slow and inefficient. This explanation would roughly run as follows: The world's financial markets were buffeted over the last years by the emergence and then the bursting of an asset price bubble. The leadership of the Fed (Mr. Greenspan in particular) is simply smarter and was quicker to spot the problems. By contrast, so the story seems to go, the ECB is a new institution that must still find its way, and its decision-making body is too large to come to quick decisions, especially given that it usually tries to forge a consensus before moving (Belke and Gros, 2002; Wypłosz, 2001; Belke and Göcke, 2003; Belke and Gros, 2003).

In this paper, I will investigate the issue of following another bank, the term currency war, which is also connected and show how much the determination of interest rates affects the interest rate of major central banks and some macroeconomic indicators.

2 METHODOLOGY AND DATA

Firstly, I will describe the original version of the Taylor rule and also describe it. I will use it to my data so I can check whether banks in the eurozone are following the Taylor rule (1a). Central banks react with delay. The original Taylor rule will also be used with Lags (1b). Secondly the Taylor rule for an open economy with the interest rate of the Fed and ECB (2a). The same rule with lags (2b). And eventually I will test the robustness analysis. In each equation, I will explain the variables and data that I am using.

The Taylor rule was first published in a work by John B. Taylor (1993). It can also be described as the interest rate rule (1). This precisely quantifies the relationship between inflation, economic growth and monetary policy of the central bank. Under the original version of the rules of the nominal interest rate it should be determined per the following formula:

$$i_t = r_t^* + a_\pi(\pi_t - \pi_t^*) + a_y(y_t - y_t^*), \qquad (1)$$

where i_t is the target short-term nominal interest rate, r_t^* equilibrium interest rate (used in long-term government securities), π_t inflation rate is measured by the GDP deflator π_t^* is the desired rate of inflation, y_t growth GDP, y_t^* potential growth, $(y_t - y_t^*)$ gap growth. Coefficients $a_p i$, a_y determine whether the central bank will focus more on inflation and economic growth (Troy and Leeper, 2007).

Using the Taylor rule has been evaluated Fed policy, also one can use this rule to tell whether a given central bank focused more on inflation and economic growth. For example, it $a_\pi = a_y = 0.5$. The Fed thus makes keeping both inflation and economic growth of the same weight. The ECB has the other side coefficients $a_\pi = 2$, $a_y = 0.8$. It concentrates therefore on a more stable price level, rather than on economic growth (Pohorský, 2011).

The Taylor rule has 4 disadvantages: (1) the Taylor rule is calculated by taking the price index (inflation) as the GDP deflator or the consumer price index. However, over the past 15 years, the Fed PCE measure of inflation (price index for personal consumption expenditures). (2) In the calculation of the rate to use variables that are not observable, but are derived from other variables. (3) The Taylor rule is a simple model with few variables. The state's economy is much more complex and sophisticated than to go to fully capture a few variables. (4) The Taylor rule does not consider risk management (Kohn, 2010).

It should be noted that central banks react with delay which is from one to two quarters. I will do regression with this delay of the data.

To find out whether the banks in the Euro Area follow someone and who they follow. Whether it is the Fed or the ECB I will use panel regression via this equation:

$$\begin{aligned} i_{it} &= c + \beta_1\, \pi_{it} + \beta_2\, \mathrm{GDP}_{it} + \beta_3\, \mathrm{ER}_{it} + \\ &+ \beta_4\, i_{\mathrm{FED},t} + \beta_5\, i_{\mathrm{ECB},t} + \phi_t + \\ &+ \gamma_i + \epsilon_{it}. \end{aligned} \tag{2}$$

Variable π_{it} represents inflation bank i at time t, GDP_{it} represents the index of industrial production of the state i at time t (or GDP). ER_{it} is the real effective exchange rate. Furthermore, using the interest rate of the Fed and the ECB, ϕ_t as a dummy variable, γ_i as fixed effects and ϵ_{it} as a residue. I will also use lags for this equation:

$$\begin{aligned} i_{i,t-n} &= c + \beta_1\, \pi_{i,t-n} + \beta_2\, \mathrm{GDP}_{i,t-n} + \\ &+ \beta_3\, \mathrm{ER}_{i,t-n} + \beta_4\, i_{\mathrm{FED},t-n} + \\ &+ \beta_5\, i_{\mathrm{ECB},t-n} + \phi_{t-n} + \\ &+ \gamma_i + \epsilon_{i,t-n}. \end{aligned} \tag{3}$$

Lags will be used as $t-1$, $t-2$ and $t-3$ because central banks react with delay. The delay that they have is usually a maximum of a quarter of a year, which is why this paper uses a maximum $t-3$. We will use delay to see individual causality between lags and central banks.

All regressions and equations use monthly data. Thus we can interpret the results as accurately as possible.

3 LITERATURE REVIEW

There is a wide body of empirical literature related to the reaction function of the central banks. Jens Klose (2014) says that Determining breakpoints in central bank reaction functions is crucial to monitor the decisions of the governing councils correctly. This is especially true during the recent financial crisis. However, reaction functions do not necessarily change at the beginning of a crisis and so the specific breakpoints need to be estimated rather than being set exogenously. While central bank reaction functions typically include more than one exogenous variable it is possible that the breakpoints in the reaction coefficients change from one independent variable to the other.

Bertrand Blancheton (2016) says that the situation of public finances emerges as a key explanatory factor, and an analysis of the sequence of central banking models is proposed from the late 19th century to the present day. Central banks have, of their own volition, given up some of their de facto independence, helping governments to contain the rise in national debt. But while keeping a step ahead of pressure from governments, they have lost the control of money supply and they have to maintain their ability to compete.

Jens Klose (2016) says that The European Central Bank (ECB) and the Eurosystem consisted of 18 member countries in the end of 2014. Each of these countries had an own vote in the interest rate decisions of the governing council. Since decisions in this council are mostly reached by unanimous vote, those seem to be harder to reach when individual country variables differ than when they are rather similar. He also says that that reaction coefficients on the inflation rate and the output gap are indeed lower when dispersion in the Euro Area countries is higher while monetary policy inertia is more pronounced in times of higher dispersion of the fundamentals.

Tab. 1: Original Taylor rule (dependent variable: interest rate, 2000–2016)

	Taylor	**Taylor2**	**EA**	**EA2**	**noEA**	**noEA2**
defl	0.037	0.024	0.007	0.006	0.126**	0.088
	(0.025)	(0.024)	(0.019)	(0.021)	(0.034)	(0.041)
defl $(t-1)$	0.028*	0.020	0.010	0.010	0.112*	0.097
	(0.014)	(0.014)	(0.011)	(0.011)	(0.038)	(0.039)
defl $(t-2)$	−0.013	−0.020	−0.023	−0.024	0.020	0.007
	(0.016)	(0.016)	(0.015)	(0.015)	(0.020)	(0.025)
defl $(t-3)$	−0.002	−0.013	−0.019	−0.022	0.032	0.008
	(0.024)	(0.025)	(0.024)	(0.026)	(0.028)	(0.058)
gdp	−0.414**	−0.446**	−0.410*	−0.384*	−0.133	−3.102
	(0.200)	(0.209)	(0.217)	(0.212)	(0.558)	(1.874)
gdp $(t-1)$	−0.078	−0.146	−0.157	−0.148	0.077	−0.277
	(0.104)	(0.102)	(0.100)	(0.101)	(0.170)	(0.317)
gdp $(t-2)$	0.269*	0.171	0.152	0.139	−0.032	2.378
	(0.139)	(0.171)	(0.168)	(0.167)	(0.400)	(1.206)
gdp $(t-3)$	0.891**	0.676*	0.575	0.583	1.278*	4.270
	(0.325)	(0.328)	(0.349)	(0.349)	(0.453)	(2.390)
ER		1.063		0.954		1.260
		(0.690)		(0.675)		(0.921)
ER $(t-1)$		−0.108		−0.376		0.820
		(0.497)		(0.580)		(1.670)
ER $(t-2)$		0.114		0.120		−0.063
		(0.325)		(0.321)		(1.691)
ER $(t-3)$		−1.030		−0.840		0.861
		(0.746)		(0.891)		(2.057)
Constant	−2.323***	−2.366***	−2.582***	−2.327***	−2.176***	−2.065**
	(0.166)	(0.190)	(0.206)	(0.199)	(0.188)	(0.480)
Observations	4,576	4,358	3,812	3,796	764	562
R-squared	0.854	0.871	0.891	0.891	0.827	0.887

Note: The numbers in the parentheses indicate standard errors, * indicates a 10% significance level, ** indicates a 5% significance level, and *** indicates a 1% significance level.

4 RESULTS

Tab. 1 presents us the original version of the Taylor rule. The column "Taylor" is the basic version of the Taylor rule. The column "Taylor2" is the basic version for the open economy means. In the formula it is added to the exchange rate. "EA" is the basic version of the rules for the Euro Area without exchange rate. "EA2" is with the exchange rate. The column "noEA" all states outside the EA and "noEA2" all states without outside the Euro Area and the formula was added exchange rate was added to the formula.

The Taylor rule says that the central bank should change the nominal interest rate in response to changes in inflation, output, or other economic conditions. From the results presented in Tab. 1.

The Taylor rule is easy to apply by looking at only the inflation rate and some output measure, it proofed to fit the actual interest rate path of many central banks quite well (Klose, 2014).

We can not see any significant dependence between none any of those variables which indicate that. We can see only little significance in GDP, but there is a − mark, which is due to economic theory nonsense. We can also see significances $p < 1$, but this significance is really small. From those results we can state that the Taylor rule written by John B. Taylor in neither Euro Area nor Asia does not apply either in the Euro Area or in Asia.

Tab. 2: Herding behavior (Taylor rule via 2a and 2b, dependent variable: interest rate, 2000–2016)

	EA −1	**noUS** −2	**noEA** −3	**noEAUS** −4
defl	0.006	0.020	0.102*	0.135***
	(0.021)	(0.024)	(0.032)	(0.000)
defl $(t-1)$	0.010	0.020	0.109*	0.151***
	(0.011)	(0.014)	(0.034)	(0.000)
defl $(t-2)$	−0.024	−0.018	−0.024	−0.005***
	(0.015)	(0.016)	(0.011)	(0.000)
defl $(t-3)$	−0.022	−0.009	0.009	0.089
	(0.026)	(0.026)	(0.073)	(.)
gdp	−0.384*	−0.415*	−2.610	−1.492
	(0.212)	(0.210)	(1.578)	(.)
gdp $(t-1)$	−0.148	−0.129	−0.094	0.174***
	(0.101)	(0.099)	(0.214)	(0.000)
gdp $(t-2)$	0.139	0.160	2.195	1.280***
	(0.167)	(0.162)	(1.048)	(0.000)
gdp $(t-3)$	0.583	0.653*	3.771	2.687***
	(0.349)	(0.332)	(2.109)	(0.000)
ER	0.954	0.580	1.936	3.873***
	(0.675)	(0.698)	(0.881)	(0.000)
ER $(t-1)$	−0.376	−0.364	0.167	−2.275***
	(0.580)	(0.495)	(1.687)	(0.000)
ER $(t-2)$	0.120	0.292	0.085	2.974***
	(0.321)	(0.299)	(1.382)	(0.000)
ER $(t-3)$	−0.840	−0.770	0.890	−2.624***
	(0.891)	(0.838)	(1.888)	(0.000)
ir_FED	−0.147	−0.141		0.352
	(0.172)	(0.180)		(0.472)
ir_FED $(t-1)$	0.721***	0.728***		−0.126**
	(0.154)	(0.168)		(0.008)
ir_FED $(t-2)$	0.000	0.000		0.000
	(0.000)	(0.000)		(0.000)
ir_FED $(t-3)$	0.090	0.113		0.138
	(0.071)	(0.087)		(0.351)
ir_ECB			0.288	0.710
			(0.451)	(0.950)
ir_ECB $(t-1)$			−0.413	
			(0.328)	
ir_ECB $(t-2)$			0.000	0.000
			(0.000)	(0.000)
ir_ECB $(t-3)$			0.735	−0.598
			(0.319)	(0.889)
Constant	−0.285	−0.423*	−0.851	−0.999**
	(0.241)	(0.216)	(0.387)	(0.052)
Observations	3,796	4,168	546	364
R-squared	0.891	0.878	0.886	0.961

Note: The numbers in the parentheses indicate standard errors, * indicates a 10% significance level, ** indicates a 5% significance level, and *** indicates a 1% significance level.

Tab. 3: Taylor rule before 2007 (dependent variable: interest rate, 2000–2016)

	EA −1	**noUS** −2	**noEA** −3	**noEAUS** −4
defl	0.000	0.023	0.184	0.273***
	(0.035)	(0.040)	(0.067)	(0.000)
gdp	0.148	0.216	3.068	2.828
	(0.454)	(0.412)	(1.336)	(.)
ER	−0.057	−0.214	3.145***	2.233***
	(0.917)	(0.894)	(0.152)	(0.000)
ir_FED	0.689***	0.645***		0.283
	(0.061)	(0.070)		(0.274)
ir_ECB			0.522	0.411
			(0.211)	(0.516)
Constant	−0.488***	−0.478***	−0.391	−0.513
	(0.141)	(0.148)	(0.433)	(0.228)
Observations	4,026	4,234	555	370
R-squared	0.889	0.877	0.879	0.948

Note: The numbers in the parentheses indicate standard errors, * indicates a 10% significance level, ** indicates a 5% significance level, and *** indicates a 1% significance level.

Tab. 2 shows regression via equation 2a, 2b. In the tables we have four regressions: Regression for the Euro Area (1), States outside the US (2), States outside the Euro Area (3) and states outside the Euro Area and US (4).

In his empirical work Klose (2016) tried to evaluate whether country preferences are present in the interest rate decisions of the ECB council. He found out that yes, it is. If there were no country preferences in the interest rate decisions, dispersion indicates of fundamental variables should be neglected by the decision markers.

Considers changes in monetary policy to be a major reason for improved economic performance (measured by variability of output and inflation). Since 2003 policy has become much more discretionary with interventions into particular markets, the expansion of the FED's balance sheet and the commitment to hold the interest rate at zero. Discretionary practices were driven by the Fed in response to the new context particularly after the subprime crisis: it anticipates government constraints and aspirations. According to Taylor the loss of de facto independence more recently was driven by the Fed itself (Taylor, 2013, p. 15).

From the results presented in Tab. 2 we can see that states outside the US and EA have an interaction between inflation and interest rates in time t and $t-1$. Interactions between GDP and interest rates are in time $t-1$, $t-2$ and $t-3$ because central banks react with a sort of delay. Interactions between the exchange rate and interest rates are valid only in time t and $t-2$, because the mark $-$ in time $t-1$ and $t-3$ does not correspond with economic theory. The main findings that we see from this table is that the Euro Area and states outside America follow the interest rate of the Fed in time $t-1$, because central banks react with a delay. We cannot see the results between the ECB, because there were no significances.

5 ROBUSTNESS ANALYSIS

I check the sensitivity of my analysis in relation to the interest rate before year 2007 (Tab. 3) and after year 2007 (Tab. 4). The results presented in the both of the tables are similar. Thus, we can believe in the robustness of our previous results in both before and after year 2007.

Tab. 4: Taylor rule after 2007 (dependent variable: interest rate, 2000–2016)

	EA −1	**noUS** −2	**noEA** −3	**noEAUS** −4
defl	0.018	0.023	0.184	0.273***
	(0.037)	(0.040)	(0.067)	(0.000)
gdp	0.191	0.216	3.068	2.828
	(0.453)	(0.412)	(1.336)	(.)
ER	−0.163	−0.214	3.145***	2.233***
	(0.899)	(0.894)	(0.152)	(0.000)
ir_FED	0.672***	0.645***		0.283
	(0.059)	(0.070)		(0.274)
ir_ECB			0.522	0.411
			(0.211)	(0.516)
Constant	−0.463***	−0.478***	−0.391	−0.513
	(0.153)	(0.148)	(0.433)	(0.228)
Observations	4,064	4,234	555	370
R-squared	0.882	0.877	0.879	0.948

Note: The numbers in the parentheses indicate standard errors, * indicates a 10% significance level, ** indicates a 5% significance level, and *** indicates a 1% significance level.

6 DISCUSSION AND CONCLUSIONS

This paper was looking for interlinkages between the interest rate of central banks and the interest rate of the ECB or Fed as per the Taylor rule. With the results which we presented, we can say that Taylor's rule for an open economy in the Euro Area does not simply apply. In today's economy central banks may use the Taylor rule, because the Taylor rule uses inflation, which in today's economies is zero or even negative. Another finding of this paper was that the interest rate of banks outside the Euro Area and America is determined by all variables. By GDP in time t, $t-1$, $t-2$ and $t-3$ as well. By Defl in time t and $t-1$. By Exchange rate in time t and $t-2$. The main finding was that states in the Euro Area and outside America tend to follow the interest rate of the Fed and none of those areas tend to follow the interest rate of the ECB. This is probably as mentioned by Belke and Gros (2002) and Wypłosz (2001) in their paper. The ECB is simply new, slow and inefficient. Following the bank that is the strongest leader is simply the best idea.

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STATE REGULATION IN CHINA IN THE LIGHT OF ITS WTO MEMBERSHIP

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ABSTRACT

When China entered the World Trade Organization (WTO) in December 2001, it also accepted some trade commitments in the area of state regulation, which have influence on the liberal free trade. The object of the paper is to highlight the changes that occurred in the selected areas of state regulation in the period 2001–2015, and to find out if China fulfilled its WTO commitments in the selected areas of state regulation. The aim of the qualitative research carried out in the area of state trading, price controls and state enterprises was to show the fact that although China liberalised its market in compliance with its trade commitments in the WTO, some strategic sectors of economy have remained under the influence of the Chinese state all the time.

KEY WORDS

General Agreement on Tariffs and Trade, price controls, state-owned enterprises, state trading enterprises, World Trade Organization

JEL CODES

F13, K33, P21

1 INTRODUCTION

After the approval of China's accession to the World Trade Organization (WTO) by the Ministerial Conference on 10 November 2001, a new era of China's trade relations with more than 140 countries around the world based on the multilateral principles started. The accession process took 15 years, during which many trade negotiations were held firstly through the GATT Working Party and later through the WTO Working Party. The results of the trade negotiations brought China a lot of trade commitments that were connected with the liberalisation of its trade regime. On the whole, it was advantage "trade" for all negotiated sides. China got an easier access to the markets of the other WTO Members

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and the possibility to participate in creating the world trade liberalisation, while the other countries achieved a lowering of the trade policy uncertainty in their exports to China (Feng et al., 2017). Now, it has been more than 15 years since China joined the WTO. In connection with this the question arises about what changes occurred in the domestic environment of the Chinese economy for doing business and trade, and what progress China recorded on its way to the market economy during the last 15 years. As only China has remained a communist state, in which state influence over the economy in different forms has already existed, discussion held by economists, politicians and the civil society on different forums is very often led by the idea if China has really liberalised its market for suppliers from foreign countries. The subject of frequent criticism is especially the existence of state-owned enterprises (SOEs) in China with respect to the fact that they are connected with subsidisation (Lee et al., 2017; Lopez et al., 2017) and other types of preferential treatment (OECD, 2016), including privileged access to information, tax concessions, preferential financing and other measures that deform market conditions. On the whole, state-owned enterprises are global competitors and they might also be more willing to shoulder political risk (OECD, 2016). They appear around the world, but on a different scale and with different power (see for example Büge et al., 2013; Fan and Hope, 2016). On the other hand, the results of the empirical analysis carried out by Yan (2017) show that privatisation and the wave of the 2002 Chinese state-owned enterprises reforms have positive and significant effects on the Chinese export performance. Leutert (2016) analyses challenges ahead in reforming China's centrally owned companies and introduces the policy implications of this reform and points out some intra-firm obstacles of the reform, such as auditing capacity, communication problems, etc. that will have impact on the results of the SOEs reform. Fan and Hope (2016) argue that as China integrates more with the world, the need for the reform of the government and the restructure of the SOEs sector becomes more imperative so as to avoid unnecessary conflicts with other economies.

The extent of government ownership or control over the allocation of resources, prices and production also played an important role in granting China the market economy status (MES). As only the official deadline for granting it was set by China's Accession Protocol by December 2016, for those WTO Members who officially committed to this during China's accession process into the WTO this issue became a more serious topic. Yu (2013) provides an analysis of the legal text of the non-market economy status under the WTO framework and bases it on the experience of some previous anti-dumping and countervailing cases. He states the idea that a non-market economy status may continue to play a different role and will have different forms of expression in trade remedy disputes against Chinese exports in the upcoming years (Yu, 2013). China is often a target of temporary trade barriers, such as anti-dumping duties, countervailing duties and safeguards. Chandra (2016) explores the impact of these barriers on Chinese exports and finds extensive evidence of trade deflection, but no evidence of trade depression. Brugier (2017) explores the new EU trade strategy towards China after 2015, which also includes the EU's refusal to grant China the market economy status and thoughts on the consequences of the new EU strategy on the EU–China trade relationship. While Taube and Schmidkonz (2015) confirm that China is not a market economy and point out that if the EU granted China such a status its ability to act against heavy Chinese dumping would be severely undermined. Curran and Maiza (2016) state that only a few EU Member States and a limited number of industries, such as ceramics and steel will be affected by granting China the market economy status. He also argues, based on the previous cases, regardless of granting China the market economy status, anti-dumping cases will continue and methodologies will have been adapted to take account of a new reality of markets. De Kok (2016) introduces some alternative methodologies that probably replaced the current EU methodology for non-

market economies in response to refusing to grant China the market economy status.

Although many papers and studies about this issue were published, granting China the market economy status has importance only for determining the normal value in the anti-dumping investigations and was not a part of China's trade commitments in the WTO to trade liberalisation. Thus, the issue of granting the MES is governed by the criteria and the national legislative of the individual WTO Members. However, the object of this paper is to highlight what changes occurred in some forms of state regulation in China which can influence free trade, and to find out if China fulfilled its WTO trade commitments in these areas of state regulation in the period 2001 to 2015, i.e. after 15 years since its entrance into the WTO. The contribution of this paper to the recent literature is in presenting some evidence that shows a real progress of China in the area of state regulation that occurred in compliance with its commitments in the WTO. The exploration of these issues requires a qualitative research based on the study of the official documents and data published by the WTO or the Chinese government.

The structure of the paper is as follows: Firstly, the theoretical framework of China's membership in the WTO is depicted. In the next part of the paper, methodology and data are introduced. The following parts of the paper are focused on China's commitments in the WTO that China accepted in some areas of state regulation and mapping the changes that occurred in these areas during the last 15 years. In conclusion, the main facts of the analysis are summarised and the results are discussed.

2 THEORETICAL FRAMEWORK OF CHINA'S MEMBERSHIP IN THE WTO

China as the Member State of the World Trade Organization had to agree with the multilateral trade rules (the so-called "general commitments") and made some "specific trade commitments" that became integral parts of China's Accession Protocol to the WTO. General trade commitments cover all parts of the main multilateral trade agreements, namely the General Agreement on Tariffs and Trade (GATT), the General Agreement on Trade and Services (GATS) and Trade-Related Aspects of Intellectual Property Rights (TRIPS). As only the accession process to the WTO as well as the number and level of specific trade commitments are different for the individual countries, firstly, China's accession to the WTO and lastly, China's institutional framework of its trade regime will be briefly introduced. Trade commitments concerning state regulations are the subject of Chapter 4.

2.1 China's Accession to the WTO

According to Article XII of the Marrakesh Agreement establishing the World Trade Organization, any state or customs territory having full autonomy in carrying out its trade policy may accede to the WTO on terms to be agreed between it and the WTO (WTO, 1994). This is done through the Working Party of the WTO Members and a process that includes bilateral, plurilateral and multilateral negotiations. Although the accession process is based on united rules for all countries, each accession to the WTO is a unique event.

China was one of the 23 original contracting parties in the General Agreement on Tariffs and Trade (GATT) in 1948, but in connection with China's revolution in 1949 the Chinese government has not participated in the creation of a multilateral trade system governed by the GATT for almost 40 years. However, the open door policy, which has been promoted by the Chinese governments since the end of 1970s as a part of the entire reform process of China, caused that in 1986 the Chinese government

notified the GATT of its interest in resuming its status as a GATT contracting party. Although almost thirty states, including, for example Brazil, Cuba, Czechoslovakia, Mexico, Turkey, New Zealand, Japan, Israel, Australia, etc., welcomed the submission of China's memorandum on its foreign trade regime and supported the establishment of a Working Party (GATT, 1987), the GATT Working Party on China's status did not bring a conclusion.

In connection with the establishment of the WTO in 1995, the GATT Working Party was converted into the WTO Working Party on the accession of China and negotiations continued simultaneously on the bilateral and multilateral level. Bilateral market access negotiations were carried out between China and 43 Member States of the WTO (counting 15 member states of the European Communities (EC) as one) that expressed interest in concluding the bilateral market access negotiations with China. However, China was able to make rapid progress in concluding its bilateral negotiations with most other WTO Member States once it reached a bilateral agreement with the USA in November 1999 and then with the European Communities in May 2000 (Gertler, 2002). In order to end the accession process, bilateral and multilateral negotiations about China's accession to the WTO were successfully concluded in September 2001. China's Protocol of Accession was approved at the Fourth Ministerial Conference held in Doha, Qatar, on 10 November 2001. One day later, China signed the agreement and deposited its instrument of ratification with the Director-General of the WTO. Thus China became the 143rd member of the WTO on 11 December 2001 in compliance with the Final Provisions of the Chinese Accession Protocol to the WTO.

2.2 Basic Institutional Framework of China's Trade Regime

China is a communist state, in which state power is distributed into a legislative, executive and judicial branch. The holder of legislative power is the National People's Congress (NPC) and its Standing Committee. The President of China promulgates the legislation adopted by the NPC and appoints the Prime Minister and other members of the central government. The State Council, i.e. the central government of China has executive power. China's judicial system consists of the Supreme People's Court, the local people's courts at different levels and special courts. There are also three intellectual property courts in China. This is the usual distribution of state power in a country. However, not all things are as simply as they seem at the first look. Specifically, China is a "communist" state, in which only one political party, i.e. the Communist Party of China (CPC), plays an important role. All members of the legislative, executive and judicial power in China have to be a member of the CPC. The second oddness of China is the China's National People's Congress. Although it has almost four thousand members, all members of the CPC, it is only unicameral. Lastly, China's total land and population can also be considered as specific. As only China has more than 1.3 billion people and is the third or fourth largest country in the world, for these reasons the state power in China is divided into lower levels. Thus besides the central government, there are four types of local governments, two types of provincial governments, several governments in municipalities and cities and rural area governments (The State Council, 2017). China's economic, trade and investment development is mainly outlined in the Central Government Five-Year Plans, sectoral and provincial Five-Years Plans. The current 13th Five-Year Plan, which will guide China's economic and social development from 2016 to 2020, was announced at the Fifth Plenum of the 18th Communist Party of the Chinese Central Committee in October 2016 (EURObiz, 2015). The 13th Five-Year Plan includes an ambitious programme of market-oriented reforms.

All these facts sparked the concerns of some WTO Members during the accession process about the presence of multiple trade instruments used by the different levels of government within China and whether the central government could effectively ensure that trade-related measures introduced at the sub-national level would conform to China's commitments in the

WTO Agreement. Although a Chinese representative confirmed that sub-national governments had no autonomous authority over issues of trade policy and accepted the Legislative Law of 2000 that determines the order of laws and regulations according to their importance, i.e. constitution, laws, administrative regulations and local regulations (WTO, 2001b), in practice the local rules and regulations may vary across regions, and many hidden barriers have existed on both state as well as local levels all the time.

3 METHODOLOGY AND DATA

The main object of the paper is to highlight the changes that occurred in the Chinese economy over three areas of state regulation in China, such as state trading, state pricing and the existence of state-owned enterprises and to find out if China fulfilled its WTO's commitments in these areas. In order to achieve the considered object of the paper, a qualitative research based on analysing different types of laws and documents published by the WTO or the Chinese state in compliance with its entrance commitments in the WTO will be used. China's trade commitments in the WTO are included in the Working Party Report and the Protocol of Accession of the People's Republic of China, including Goods and Services Schedules.

Besides the descriptive statistics of change, the research will be carried out using logical methods, such as abstraction, analysis, comparison and deduction. Firstly, by using abstraction, a model situation will be created, i.e. China and its accession to the WTO. The specification of China's trade policy framework and its commitments in the WTO will serve to analyse the role of the state and the regional institutions in the trade area. The changes in the area of state regulation will be carried out by the comparison of historical data. The results of the analysis will be used for the deduction of the main conclusions. With respect to the fact that a lot of information pertaining to the Chinese economy is published by the Chinese authorities only in Chinese, thus, the monitoring reports of the WTO Secretariat were the main source of information. The analysis will cover the period 2001–2015.

4 RESULTS OF LEGAL INTERPRETATION OF CHINA'S TRADE COMMITMENTS WITH FOCUS ON STATE REGULATION

The membership in the WTO means for China that it had to agree and to take concrete steps to remove trade barriers and to open its markets to foreign companies and their exports in every product sector and for a wide range of services. However, some forms of state regulation, which can disturb the market environment in China, occur all the time.

4.1 State Trading

When China accessed to the WTO, the right to trade was limited to some 35,000 qualifying enterprises that had to fulfil the qualification criteria, such as a minimum registered capital requirement of 5 million renminbi (RMB) and others. In compliance with Section 5.1 of the Protocol of Accession, China progressively liberalised the availability and scope of the right to trade, so that, within three years after accession, all enterprises in China get the right to trade in all goods throughout the customs territory of China, except for those goods listed in Annex 2A of the Protocol of Accession, which continue to be subject to state trading (WTO, 2001a). As for liberalisation in distribution services, it is carried out in accordance with China's schedule of specific

commitments in the GATS. Goods subject to state trading can be imported and exported only by the authorised enterprises. Specific quantities of some goods that are subject to state trading may also be imported by non-state trading enterprises that have obtained trading rights through registration. However, exports subject to state trading must always be exported by STEs. Some STEs, however, are not state owned enterprises, i.e. STEs the exports of tungsten, antimony, and silver (WTO, 2012). Trading enterprises may import or export a limited volume of goods in the frame of tariff rate quotas (TRQ). While the National Development and Reform Commission (NDRC) issues the criteria for an enterprise to gain trading rights for grains and cotton on a yearly basis, the Ministry of Commerce (MOFCOM) issues it for other products. Besides issuing the licence, both authorities announce TRQ and the allocation method. However, usually no data on import and export quantities for products subject to state-trading arrangements are available, with the exception of 2006–2008.

On the import side, there are eight products, such as grain (wheat, maize and rice), vegetable oil, sugar, tobacco, crude oil, processed oil, chemical fertilizer and cotton that are the subject of China's state trading enterprises (STEs) according to the Protocol of Accession. The list of products subject to state trading includes a different number of commodity lines, i.e. lines of the Harmonised system (HS) as well as a different number of STEs. For example, the import of grain, which includes 18 HS commodity lines, can be carried out by only one STE, namely the China National Cereals, Oil & Foodstuff Import and Export Co. On the other hand, cotton is included in only two HS commodity lines, which can be imported by four STEs. The highest "competition" among STEs exists in trade in vegetable oil, which can be imported by six STEs. Tab. 1 shows products and TRQ that were the subject of state trading in the period 2002–2015. Tobacco and other chemical fertilisers are the only state-trade products that can be traded solely by STEs, although data about their imports have not been available since 2008. Only the China National Tobacco Import & Export Group Corporation, a state-trading corporation, is allowed to import tobacco (WTO, 2012). STEs remained significant also in the import of wheat, urea, sugar and maize, in which TRQ reached more than 50% during the entire period. Rapeseed, soybeen and palm oils were subject to state trading until 2006. The quota for oils and some other products, for example natural rubber, recorded in Tab. 1, was set in metric tonnes (mt). The non-STE share in the import of processed and crude oil should have been increased annually by 15% for the first ten years after accession under China's Accession Protocol. In reality, China's Customs are unable to collect data about the actual STEs imports under the existing customs clearing system, because non-STEs may import their allocated amount through STEs (WTO, 2006). The import of acrylic, plywood and steel was subject to automatic licence (AL).

On the export side, there are 21 products that are subject to state trading under China's Accession Protocol. These products again include a different number of HS lines and STEs that have a monopoly position in the export of these products. Especially cotton yarn has been exported by the are highest number of STEs, such as the Chinatex Cotton Import & Export Co., etc. STEs as well as products that were subject to state exports remained unchanged during 2002–2015 (see Tab. 2). While tea, soybeans and other products introduced in Tab. 2 were not exported by STEs during the entire period, tobacco was subject to state trading, although this product was not included in Annex 2A2 of the Protocol of Accession. Thus, tobacco is the only state-traded product that can be traded solely by STEs. Trade with another 245 products that were introduced in Annex 2B of the Protocol of Accession, such as natural rubber, timber, plywood, wool, acrylic and steel, was liberalised within 3 years after China's accession to the WTO according to the results of the WTO negotiations. Information about TRQ of STEs is available only in the Chinese language.

Tab. 1: Import quotas allocated to STEs in 2002–2015 (% of quota)

Product	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Wheat	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Maize	68	64	60	60	60	60	60	60	60	60	60	60	60	60
Rice	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Sugar	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Rapeseed oil	34	26	18	10	10	×	×	×	×	×	×	×	×	×
Soybean oil	34	26	18	10	10	×	×	×	×	×	×	×	×	×
Palm oil	34	26	18	10	10	×	×	×	×	×	×	×	×	×
Cotton	33	33	33	33	33	33	33	33	33	33	33	33	33	33
Urea	90	90	90	90	90	90	90	90	90	90	90	90	90	90
NPK[a]	85	80	75	70	70	60	55	51	51	51	51	51	51	51
DP[b]	85	80	75	70	70	65	51	51	51	51	51	51	51	51
OCHF[c]	100	100	100	100	100	100	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Tobacco	100	100	100	100	100	100	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Cruide oil	mt	mt	mt	mt	mt	mt	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Process. oil	mt	mt	mt	mt	mt	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
NR[d]	n.a.	mt	AL	AL	×	×	×	×	×	×	×	×	×	×
Plywood	AL	AL	AL	×	×	×	×	×	×	×	×	×	×	×
Wool	mt	mt	mt	×	×	×	×	×	×	×	×	×	×	×
Acrylic	AL	AL	AL	×	×	×	×	×	×	×	×	×	×	×
Steel	AL	AL	AL	×	×	×	×	×	×	×	×	×	×	×

Note: [a]NPK – mineral fertiliser; [b]DP – Diammonium phosphate; [c]OCHF – other chemical fertilisers; [d]NR – Natural rubber.; n.a. not applicable (these products, although subject to import under state trading, are not subject to TRQ). The "×" stands for TRQ was abolished. Source: WTO (2006, 2010, 2012, 2014, 2016).

4.2 Price Controls

Price controls represent another type of state regulation in China. China agreed in the WTO that the prices for traded goods and services in every sector would be determined by the market forces and the dual pricing for such goods and services would be eliminated, but some goods and services may be subject to price control all the time. The Chinese authorities apply price controls to products and services deemed to have a direct impact on the national economy and people's livelihoods. Price regulation is carried out on different levels of state administrative, i.e. via the NDRC at the central level, and the provincial level DRCs and the Bureau of Commodity Pricing in each province. The methodology for setting prices may differ across provinces, but takes into account the same factors, such as the market situation, average social costs, regional and seasonal factors and many others. The Chinese authorities publish in an official journal a list of goods and services subject to state pricing and changes thereto, together with price-setting mechanisms and policies. However, the Central Government Pricing Catalogue or Local Government Pricing Catalogues are published only in Chinese. Currently, according to the Chinese authorities, reserve-materials procurement is generally conducted through auctions; thus, the prices are the result of competitive bidding (WTO, 2014).

Products and services that are subject to price controls in China should be in compliance with Annex 4 of the Protocol of Accession. WTO commitments in the area of price controls were implemented by China into its legislative under the Price Law of 1997. Tab. 3 includes a list of products and services that are subject to government pricing and government-guided pricing. The difference between both types of

Tab. 2: List of export products subject to state-trading arrangements in 2002–2015

Product	2002–2005	2006–2008	2009–2011	2011–2013	2014–2015
Tea	t.a.	t.a.	t.a.	t.a.	t.a.
Rice	×	×	×	×	×
Corn/Maize	×	×	×	×	×
Soybeans	n.a.	n.a.	n.a.	n.a.	n.a.
Tungsten ore	×	×	×	×	×
Ammonium paratungst.					
Tungstate products	×	×	×	×	×
Coal	×	×	×	×	×
Crude oil	×	×	×	×	×
Processed oil	×	×	×	×	×
Silk	t.a.	t.a.	t.a.	t.a.	t.a.
Unbleached silk	n.a.	n.a.	n.a.	n.a.	n.a.
Cotton	×	×	×	×	×
Cotton yarn[a]	n.a.	n.a.	n.a.	n.a.	n.a.
Cotton yarn[b]	n.a.	n.a.	n.a.	n.a.	n.a.
Woven fabrics of cotton[a]	n.a.	n.a.	n.a.	n.a.	n.a.
Woven fabrics of cotton[b]	n.a.	n.a.	n.a.	n.a.	n.a.
Antimony ores	×	×	×	×	×
Antimony oxide					
Antimony products	×	×	×	×	×
Silver	×	×	×	t.a.	×
(Additional products)	Tobacco	Tobacco	Tobacco	Tobacco	Tobacco

Note: n.a. – China not applied state trading since it joined the WTO; t.a. – state-trading temporarily abolished since 2005. Empty place means that any information was published. Source: WTO (2006, 2010, 2012, 2014, 2016).

state prices is that the government prices (or government-determined prices) are fixed prices set by the authorities, while the government-guided prices are prices set within a range. When China entered into the WTO in December 2001, no fixed time frame for the adjustment of government prices or government guidance prices was set.

In the period 2002–2015, China's government carried out price controls in areas that were approved in China's Accession Protocol. State interventions were carried out with respect to achieving the national development objects and economic development. Specifically, government prices were applied to the State's key reserve materials (grain, cotton, sugar, silkworm cocoons, crude oil, processed oil, and chemical fertiliser), and items subject to state monopoly or oligopoly (e.g. tobacco leaf, salt, explosives for civilian use, drugs on medical insurance, teaching materials, certain types of refined oil products, natural gas, water supply by hydro projects directly under the administration of the Central Government and by inter-provincial hydro projects, military goods, some transportation services, basic postal services, and basic telecommunications services). Government guided prices were applied to products such as grain, vegetable oil, processed oil, silkworm cocoons and cotton, and services that are introduced in Tab. 3.

Although the list of goods and services subject to government prices and government-guided prices has not changed since 2001, there have been numerous adjustments to the rates and fees (WTO, 2014). During the monitored period, China gradually liberalised the prices of most agricultural products, several goods and services, such as the ex-factory price of explosive materials, and the charges for some

Tab. 3: Overview of products and services subject to price controls in China

Government set prices	Government guided prices
Products:	Products:
Tobacco, edible salt, natural gas, pharmaceuticals	Grain, vegetable oil, processed oil, fertilizer, silkworm cocoons, cotton
Services:	Services:
Postal and telecommunication services charges, entrance fees for tour sites, education services charges, public utilities (water, gas, electricity, etc.)	Transport services charges, professional services charges, charges for commission agents' services, charges for settlement, clearing and transmission services of banks, selling price and renting fees of residential apartments, health related services

Source: WTO (2001b).

Tab. 4: Indicators of state-holding industrial enterprises in 2000-2015

	2000	2005	2010	2015
Number of SOEs (in units)	53,489	27,477	20,253	19,273
Total assets (in 100 mill. RMB)	84,014.94	117,629.61	247,759.86	397,403.65
Total profits (in 100 mill. RMB)	2,408.33	6,519.75	14,737.65	11,416.72

Source: National Bureau of Statistics of China (2016).

construction projects. The prices of military goods and the price of tobacco leaves were also liberalised, although these products are a state monopoly all the time. Important central reserve materials, i.e. grain, cotton, sugar, filature silk, crude and processed oil, and chemicals were removed from the 2016 Catalogue (WTO, 2016). A minimum procurement price scheme remains in place for rice and wheat in the major production areas.

During the monitored period, the Chinese government also introduced some temporary measures in reaction to the inflation pressures in 2006 and 2008. These measures included a strict control of the prices of gasoline, natural gas, electricity and charges for gas, water, heating and public transport in cities. In addition, temporary interventions in setting the price of some important commodities and services, including grain, edible vegetable oil, meat, milk, and eggs, were also introduced. The Chinese government started to monitor the price changes of some basic necessities that did not have registration or notification requirements and stricter penalties were also adopted on illegal price activities (WTO, 2010).

However, besides the number areas (products and services) that are subject to price control in China, it is also important to follow the level and degree of these, by the WTO Members, "accepted", state interventions. While in 2001, 3.9% of the Government's total budgetary expenditure was on price subsidies, it declined to 2.9% in 2002 and 2.5% in 2003, while in 2004 the price subsidies slightly increased to 2.8% of China's total budgetary expenditures (WTO, 2008). However, since 2004, the Chinese authorities did not provide any information about it yet. Summing up, on the one hand, China liberalised some prices after its entrance into the WTO, but on the other hand, the Chinese authorities occasionally increased the subsidies for some products (for example a subsidy to cotton farmers) with respect to the economic and social needs. The existence of a state monopoly in the sensitive areas of the Chinese economy also remained unchanged.

4.3 State-owned Enterprises

A huge discussion is led about state-owned enterprises (SOEs) that have a destructive effect on the market as was confirmed by many authors (e.g., Lee et al., 2017; Lopez et al., 2017). They have a long history in China's economic development, but they have

also been reformed for a long time. Although SOEs are not mentioned in the Protocol of Accession, in the Report of Working Party China's representatives stated that the state-owned enterprises basically operated in accordance with rules of market economy (Section 5.43 of the Report of Working Party) and the Chinese government would not influence, directly or indirectly, commercial decisions on the part of SOEs (Section 5.46 of the Report of Working Party). The general commitments of the WTO, such as non-discrimination and the national treatment rules, also obliged China to ensure equivalent conditions for all subjects (SOEs as well as private enterprises) on its domestic market, which is commonly referred to as "competitive neutrality" (see OECD, 2016, p. 125).

Currently, three types of SOEs occur in China, such as: (1) state-owned enterprises (pure SOEs) with 100% state ownership, (2) state-controlled enterprises with state controlled ownership and (3) state-invested enterprises, in which the state owns some of the shares of the company. The definition of SOEs and their organisation structure is introduced in Section 4 of China's Company Law, revised in 2013, Article 64-70 (FDI, 2013). The incorporation of SOEs under the Company Law contributed to the improvement of the corporate governance of the Chinese SOEs.

However, not only the management of SOEs underwent several changes; also the number and profitability of SOEs have changed during the monitored period. As only they occur in the different economic sectors and organisation structure, the data about their numbers published by China's and other bureaus are also different. According to the WTO, the number of SOEs in China declined from more than 173 thousand in 2001 to almost 138 thousand in 2004 (WTO, 2006). However, other data show the decline of the number of SOEs from more than 929 thousand in 2004 to 730 thousand in 2006 (WTO, 2008) to up to less than 458 thousand in 2010 (WTO, 2012). The number of SOEs in the industrial sector declined from about 53 thousand in 2000 to about 19 thousand in 2015 (see Tab. 4). In China, SOEs can be found on the central as well as local levels. Provincial SOEs operate in highly fragmented environments. The central government controls SOEs through the State-Owned Assets Supervision and Administration Commission of the ruling State Council (SASAC), but the supervision of provincial SOEs is spread across 36 provincial-level asset management commissions and 442 subbranches (OECD, 2016). Thus, they may be subject to less stringent supervision than central SOEs.

Regardless of the fact that the data about the number of SOEs are different, the declining trend of their number is evident. This trend is in compliance with China's economic strategy and the reform endeavours. This is also a better report for foreign countries, the WTO Members, which enter the Chinese market and compete with the Chinese firms on the world markets. The decline of the number of SOEs is also connected with lower transfers to loss-making SOEs. While in 2001, these transfers were about 30 billion RMB, i.e. 1.6% of the total budgetary expenditure, they declined to less than 22 billion RMB or 0.8% of the total budgetary expenditure in China in 2004 (WTO, 2006) and 18 billion RMB, i.e. 0.4% of the total budgetary expenditure, in 2006 (WTO, 2008). Other data about transfers to loss-making SOEs were not published (at least not in English) by the Chinese authorities. However, regardless of the decline of SOEs in China, the central/state SOEs are concentrated in sectors of strategic importance to the economy and their turnover was equivalent to 39–40% of China's GDP in 2014 (OECD, 2016; WTO 2016). When we consider that SOEs accounted for 35% of GDP, according to the data published by the WTO in 2008, the progress in the lowering of the influence of the Chinese state under SOEs is not so evident. SOEs have dominated in sectors of strategic importance such as energy, utilities, transport, financial, telecom, education, and health care services all the time. Specifically, the share of SOEs in strategic subsectors such as communication and aviation services is estimated at 80–90% (WTO, 2016). The largest SOEs can also be found on the Fortune Global 500 list. In 2016, a total of 110 Chinese

Tab. 5: Selected indicators of China's largest SOEs in 2016

	Revenues (mill. USD)	Profits (mill. USD)	Employees
State Grid	329,601	10,201	927,839
China National Petroleum	299,271	7,091	1,589,508
Sinopec Group	294,344	3,595	810,538

Source: Fortune, 2016

companies were on this list, rising from 106 in the previous year. Some basic indicators about China's three largest SOEs that were among the top 4 on the 2016 Fortune Global 500 list are introduced in Tab. 5.

Except for strategic sectors, the share of the output produced by China's SOEs in the industrial sector gradually declined from 26.6% in 1998 to 22.3% in 2014. So did the number of state-holding industrial enterprises in China decline from 53,489 in 2000 to 19,273 in 2015, although their assets and profits increased 4.7 times according to data published by the Chinese authorities (see Tab. 4). However, some authors state that the profitability of state companies has fallen, even as private firms have grown in strength. SOEs returns are now about half those of their non-state peers (The Economist, 2014). In reality, SOEs are divided into for-profit entities and public services entities. Their profitability appears to vary by region, size and sector. While the profits of SOEs in transportation, electronics, electric power and chemical industries have a tendency to growth, the profits of iron and steel, coal and non-ferrous metals industries continue to show losses (WTO, 2016).

During the monitored period, SOEs reforms in China, which began in the late 1970s, has continued. They included the reorganisation of SOEs through mergers and acquisitions, as well as closing down, and their corporatisation and privatisation. Corporatisation, i.e. transformation into joint-stock companies and their listing on stock exchanges contributed to the improvement of the corporate governance of China's SOEs. OECD (2015) recorded that at the end of 2011, there were 144,700 state-owned and state-holding enterprises in China, excluding financial enterprises with the total assets of RMB 85.4 trillion, an equity value of RMB 29.2 trillion, and profits of RMB 2.6 trillion. In May 2015, according to the WTO, state-owned holding enterprises listed on the Shangai and Shenzen Stock Exchanges were 1,012. This accounted for more than 68% of the total equity of all the companies listed in these two stock exchanges (WTO, 2016).

The Chinese authorities are aware of the inefficiency of SOEs, and thus, in order to make SOEs more profitable they announced the SOEs Reform Plan aimed at higher ownership diversification of SOEs in November 2013 (over the 13th FYP). The plan content defines the role of the state and market. The private sector should be a vehicle for achieving policy objectives, while SOEs should become more profit-oriented and shift to mixed ownership. In 2014, China's State Council listed 80 projects in state-dominated sectors to private investors by 2020, including transportation infrastructure, clean energy and energy projects. At the provincial level, by September 2014, over 20 provinces had announced concrete implementation programs involving the potential listing or selling off assets in up to 70% of the provincial SOEs by 2017 (Dusek et al., 2015).

However, despite all reforms, SOEs still tend to benefit from lower cost of and better access to capital than non-public-sector enterprises (WTO, 2010), i.e. domestic private enterprises (WTO, 2012). SOEs may also receive capital injections from the government if needed (WTO, 2016). Thus, the profit of SOEs is influenced more by their monopolistic market position accompanied by state support, easier access to loans and more favourable policies than their efficiency. For this reason, they are also called the "zombie corporations".

Thus, SOEs have anti-competitive effects and impede other WTO Members. As only the activities of China's SOEs are usually connected

with unfair trade practices, such as subsidies or dumping, they are often the source of trade disputes in the WTO. Although China is committed to eliminate all subsidies that are defined in Article 3 of the Agreement on Subsidies and Countervailing Measures (see Section 10.3 of the Protocol of Accession), subsidising the loss-making SOEs is documented by statistics. In 2014, 2,473 companies listed in the Shanghai and the Shenzhen Stock Exchanges received government support amounting to RMB 89.421 billion. Of these companies, 154 received more than RMB 100 million in 2014; 105 of which were SOEs (WTO, 2016).

5 DISCUSSION AND CONCLUSIONS

In this paper, only three ways were explored how the Chinese central government and local governments disrupt the market environment, although many other state interventions occur in the area of tariff as well as non-tariff measures. They also occur in commercial services, including the financial system (Fojtíková and Kovářová, 2014). As only China has been the WTO Member since 2001, there is a question whether the role of the Chinese state in its mix economy (explored through state trading, price controls and state-owned enterprises) is in compliance with the WTO commitments.

The analyses that were carried out in the mentioned areas confirmed that the behaviour of the Chinese authorities after 15 years since its entrance into the WTO is in principle in compliance with the official documents, such as the Protocol of Accession and the Working Party, although some small discrepancies from the trade commitments were discovered. The exceptions from the multilateral trading rules concerning STEs and price controls, introduced in the Annexes of the Protocol of Accession, were accepted for China by all WTO Members. On the other hand, China committed to non-discrimination treatment, including national treatment (Section 3 of the Protocol of Accession). From this point of view, the activities of STEs and SOEs should have the same impact on the private domestic as well as foreign enterprises. In principle, a negative impact of the different forms of state monopoly on private entities is evident; it limits them in the export or import of products that are protected by the Chinese state.

The important fact is that SOEs also occur in other WTO states, including the most advanced ones, not only in China. However, Büge et al. (2013) analysed the share of SOEs in sales, assets and market value in selected countries and found out that the share of SOEs among the countries' top ten firms reached, for example, 11% in Germany, 48% in Norway, 59% in India, 81% in Russia, but the largest share was in China, i.e. 96%. As Lardy (2014) states, state firms do not dominate China's economy, but they are still a substantial drag on its growth. Although the Chinese government started the long-term reform of its SOEs, the main motivation for it is to improve the efficiency of SOEs rather than to open China to the world competition. The reform of SOEs, which was released by the Communist Party of China Central Committee and the State Council that prefer mixed-ownership of SOEs in China, confirms it. In addition, opening some sensitive sectors of economy to foreign investors can be forbidden or followed by other non-tariff obstacles, such as a licence system. The important point is the fact that SOEs adopt the government financial supports, although the Chinese authorities promised that all SOEs and state-invested enterprises would make purchases and sales based solely on commercial consideration and that the government would not influence, directly or indirectly, commercial decisions (Section 5.46 of the Report of Working Party). It is also the reason why China is a frequent participant of trade disputes in the WTO. Summing up, although some positive signals were recorded, such as the decline of the number of SOEs in China during the monitored period or the improvement of the corporate governance of SOEs, their influence on the economy/share in GDP is not obvious. On the contrary, SOEs

are dominant in strategic sectors and their legal fixture is evident under the Anti-Monopoly Law, which allows SOEs to exercise exclusive activities in sectors considered vital for the Chinese economy.

The transparency of price controls is also debatable. Although information about state pricing is regularly published in the Pricing Catalogues by the Chinese authorities in compliance with China's commitments, the text is available only in Chinese. It can be a problem for many traders from the other WTO countries, who have to hire translators and to pay additional costs in order to get topical information about the Chinese state pricing. From this point of view, the transparency of the Chinese economy is lower. However, the contractual conditions in the WTO were not determined in a way in which China shall have to provide state pricing in one of the official languages of the WTO, i.e. English, French or Spanish. From this aspect, the persisting influence of the Chinese state on its economy or the less transparent environment in China would also be considered as the result of China's accession process to the WTO (accompanied by many approved exceptions), not only as the violation of China's trade commitments in the WTO.

The influence of the Chinese state on its economy remains evident also from state trading. The export or import of the key reserve materials, such as tobacco, chemical fertilisers and others is carried out solely by state enterprises, which is in compliance with China's Accession Protocol, but some progress in liberalisation is obvious. From the whole 20 products subject to state trading under the Accession Protocol, only eight were imported by STEs in 2015. Similarly, on the export side, in 2015, STEs exported only 12 products introduced on the list of products subject to state trading from the whole 21 products. However, while tobacco was not originally introduced in the list of products subject to state trading, the Chinese authorities consider this product as a "national interest". However, the issue should not be seen only in the number of products subject to STEs or the number of products subject to state pricing as well as the number of SOEs, but also the scale on which the Chinese state regulates its economy is important for the assessing the influence of the state on its economy. China's general problem is an unsufficiently transparent area of its activities with respect to the unwillingness of the Chinese authorities to publish data in English.

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JOB SATISFACTION AND ITS INFLUENCE ON PROACTIVE BEHAVIOUR

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ABSTRACT

The purpose of this paper is to show the relation between job satisfaction and proactive behaviour. Existing studies clearly indicate the impact of proactive attitude on job satisfaction. The authors' objective was to verify this relation, assuming reversed hypothesis. Therefore their intention was to establish to what extent job satisfaction affects proactive attitude.

Structural equation modelling (SEM) was implemented to test and verify the micromodel containing two latent variables: job satisfaction (exogenic) and proactive behaviour (endogenic). Both of them were equipped with relevant manifest variables, measured in a survey. The survey questionnaires were distributed using snowballing method and the model was tested on the sample of 292 employees.

The verification process came out positive and provided necessary data to support the assumed hypothesis. However the model fit was problematic in a sense that it requires verification of the measurement model in order to increase the internal consistency of the set of variables used.

These findings can contribute to future studies on job satisfaction. The article points out that as the active attitude is the result, rather than the factor of the job satisfaction, it can be of great importance to people managing human resources.

KEY WORDS

job satisfaction, employee satisfaction, proactive behaviour, structural equation modelling, SEM

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1 INTRODUCTION

1.1 Job Satisfaction

Job satisfaction is one of the most important constructs of many theoretical and empirical studies in social and economic sciences. It represents a combination of positive or negative feelings, attitudes of employees, their experience of work-environment. Job satisfaction is often presented in relation to employees' attitude towards their work, i.e. how well they perform their assigned professional duties. People in the same job environment may feel the job satisfaction in very different ways, as various factors can influence their feelings. Their satisfaction may be related both to individual features and job environment.

Many authors present numerous approaches to defining job satisfaction phenomenon (e.g. Locke, 1976; Vroom, 1964; Wanous and Lawler, 1972; Churchill et al., 1974; O'Reilly, 1991; Spector, 1997; Hulin and Judge, 2003; Bernstein and Nash, 2008; Bartkowiak, 2009). Majority of definitions focus on affective feeling which employees have towards their job, however job satisfaction can be perceived as a configuration of three components: affective, cognitive and behavioral one (Jex, 2002). Other scholars, e.g. Wudarzewski (2016) claim that job satisfaction in the context of research and diagnostic studies can be understood in three ways: cognitive, emotional and process.

Comprehension of factors affecting job satisfaction is imperative and relevant not only from the point of view of the company but also from the point of view of the employees. Locke (1976, cited in Sempane et al., 2002) mentions several dimensions of job satisfaction, such as: work, pay, promotions, recognition, benefits, working conditions, supervision, coworkers, company and management. According to Bugdol (2006) the concept of job satisfaction includes the following factors: salaries, motivation, relationships, market position of the company, the opinions about the organization and the organization of the nature of work. Luthans (1998) talks about a few other aspects of job satisfaction: (1) Job satisfaction is an emotional response to a job situation. As such it cannot be seen, it can only be inferred. (2) Job satisfaction is often determined by how well results meet or exceed expectations. (3) Job satisfaction represents several related attitudes which are the most significant characteristics of a job to which people have effective response.

Wudarzewski (2016) pointed out 74 potential components of job satisfaction and grouped them into 17 dimensions (modules). Some of them can be called 'proactive', such as: flexibility, creativity, self-reliance, commitment to work. However other studies reduce the number of job satisfaction dimensions. For example Kulikowski (2016) positively verifies scale consisting of 5 factors only, namely: work conditions, salary, quality of work of superiors and colleagues, as well as fair treatment.

The components of job satisfaction depend on the studied branch (industry). For example, Niedzielski (2017), presenting the results of research from one of the Polish public administration institutions, notes that the general job satisfaction is mostly affected by three factors: a clear definition of responsibilities and good organization of work, the opportunity for development of employees and a good climate in the workplace. On the other side, the level of job satisfaction decreases mainly due to factors such as: low salaries, lack of recognition by the employer and the negative image of the organization.

Contemporary researchers show also the relationship of job satisfaction with other, unconventional factors. For example Leszczyńska (2016) proves that job satisfaction can be affected by an environmental orientation of an organization. In her opinion, the environmental orientation leads to a greater job satisfaction, for workers with more ecological knowledge and professing the values of the environment. This proves that many factors of job satisfaction have not been discovered yet.

Job satisfaction also brings a number of consequences and benefits for the employee, for the organization and for the society (Jaros, 2005, cited in Lubrańska, 2014). These bene-

fits include: individual life satisfaction, better health, longer life, less absenteeism and less desire to change jobs, a stronger sense of happiness and the ability of self-realization (Zalewska, 2003, cited in Lubrańska, 2014).

Satisfied employees are particularly valuable for organizations, have a better involvement in the execution of their duties, and tend to be more loyal to the employer.

1.2 Proactive Behaviour

In recent years proactivity has become an area of researchers' interests. Parker and Bindl (2016) counted over 360 important articles in psychology and management literature, published since 1990 that have 'proactive' in their abstract or that address topics, that they consider to be the examples of proactivity (taking charge, proactive feedback seeking, individual innovation, personal initiative).

Grant and Ashford (2008) defined proactive behaviour as "anticipatory action that employees take to impact themselves and/or their environments". Proactive behaviour can also be defined as "self-directed and future-focused action in an organization, where the individual aims to bring about change, including change to the situation and/or change within oneself" (Bindl and Parker, 2011). Crant (2000) describes proactive behaviour as taking initiative in improving current circumstances or creating new ones, which involves challenging the *status quo* rather than adapting to present conditions passively.

To be proactive is to take the initiative in improving business, change things, in an intended direction, for the better (Bateman and Crant, 1999). Employees solving problems occurring in their work in a proactive way are more flexible and show initiative or take action (Crant, 1995; Parker, 2000; Swan and Fox, 2009).

Literature claims that the opposite of 'proactive' is 'adaptative' (e.g. Nguyen et al., 2017) or 'reactive' (cf. Davidson and Van Dyne, 2016).

Parker and Bindl (2016) determine three areas of the concept of 'proactivity': (1) proactive personality – as a determinant of proactive behaviour; (2) proactive initiative – personal, action-oriented initiative; (3) proactive behaviour – proactivity as a way of behaving, rather than a trait.

We can come across numerous types of classification of proactivity for example: individual task proactivity, team member proactivity and organization member proactivity (Griffin et al., 2007); proorganizational (directed at the organization), prosocial (directed at the workgroup/colleagues), and pro-self proactive behaviours (directed at facilitating the achievement of one's personal or career goals) according to Belschak et al. (2010). Parker and Collins (2010) proposed three categories of proactive behaviour: proactive work behaviour, proactive strategic behaviour and the proactive person–environment fit behaviour. Bańka (2015), presenting results of the research on young people, distinguishes four types of proactive behaviour: general and cognitive proactivity, active in building support networks, active in the construction of psychological comfort

Grant and Ashford (2008) pointed out that proactive behaviours vary in terms of their form (the type of behaviour), their intended target of impact (self, others, and/or the organization), their frequency (how often), their timing (where and when), and their tactics (how).

Proactive behaviour at work involves self-initiated, anticipatory action aimed at changing either the situation or one's personality (Bindl and Parker, 2011). To be proactive is to change things in an intended direction and to improve them. Bateman and Crant (1999) show seven interconnected behaviours of proactive person. Those people: (1) scan for change opportunities; (2) set effective, change-oriented goals; (3) anticipate and prevent problems; (4) do different things, or do things differently; (5) take action; (6) persevere; (7) achieve results.

According to Bańka (2015) proactive people are stubborn, looking for opportunities to reach their intended target, focus on maximizing their achievements, predict problems and take remedial measures, focus on searching for new ways of achieving goals, take action and are aware of the risks.

Proactive people can define new problems, find new solutions and provide active leadership through an uncertain future, may alter their own work methods and procedures, identify opportunities and act on them, look for ways to select work environment that match their vocational needs and values (Bateman and Crant, 1999; Rodopman, 2006).

Two of the most frequently identified antecedents of proactivity in the literature are work design and leadership (Parker and Bindl, 2016). Some studies reveal the influence of other factors. For example Caesens et al. (2016) showed that perceived organizational support was positively related to temporal change in proactive behaviour directed towards the organization. Employees who feel that their organization highly values their contribution at work and cares about their well-being are more inclined to act proactively.

Undoubtedly, there are numbers of empirical studies in the literature that examine the relationship between proactive behaviour/personality and employee satisfaction or career satisfaction etc. (Seibert et al., 1999; Wanberg and Kammeyer-Mueller, 2000). Researchers suggest a consistent link between personality and outcomes such as performance, career success and job satisfaction (Lee et al., 2003).

In some studies, proactive personality is associated with high career satisfaction (Seibert et al., 1999) or career success and satisfaction (Bateman and Crant, 1993; Ng et al., 2005). The results of the research carried out by Ismail et al. (2016) demonstrated that proactive behaviour acts as an important mediating variable in the relationship between career management and career satisfaction. According to them, positive proactive behaviour may lead to a higher career satisfaction in the organization. However, this relationship seems to depend on a studied branch (industry). For example Li et al. (2015) revealed that proactive personality has a significant positive effect on teachers' job satisfaction. In addition, the relation between proactive personality and teachers' job satisfaction was simply mediated by self-efficacy and work engagement. On the other hand, Ramli et al. (2016) showed that in higher education association between proactive behaviour and career success is insignificant.

In Chan's (2006) study, proactive personality was positively related to job satisfaction only when accompanied by situational judgment effectiveness (Rodopman, 2006). Krot and Lewicka (2016) show that active behavioural components such as commitment to profession or pro-innovation attitude are related to job satisfaction and commitment.

Belschak et al. (2010) claims that proactive behaviour leads to increased positive affect and job satisfaction, sometimes it may be more efficient to 'let go' rather than persist and overcome obstacles.

Proactivity also appears in the broader context of job crafting. Job crafting is referred to "the physical and cognitive changes individuals make in the task or relational boundaries of their work" (Wrzesniewski and Dutton, 2001). This construct has not yet been explored much, but the latest studies, e.g. Dulara and Sen (2016) reveal positive relationship between proactive personality and job crafting leading to in-role performance (task performance).

Based upon this theoretical consideration we suggest the following hypothesis:

H_1: There is a positive influence between job satisfaction and proactive behaviour. It is not only proactive behaviour that affects the job satisfaction, as tested in previous studies, but it is possible to verify the reverse relation.

2 METHODOLOGY AND DATA

2.1 Research Instrument

To verify the hypothesis we used structural equation modelling (SEM). As a framework for the study we proposed a micromodel containing two latent variables: job satisfaction (exogenic) and proactive behaviour (endogenic). It is shown in Fig. 1.

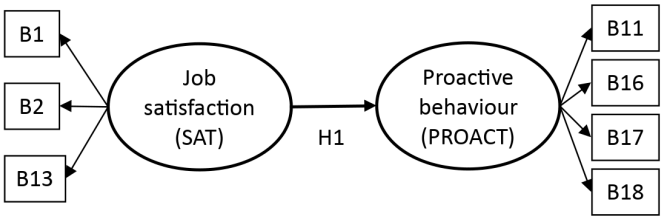

Fig. 1: Micromodel used in the study

Tab. 1: Variables used in the model

Latent variable	Manifest variables	
Job satisfaction	B1	I trust my colleagues
(SAT)	B2	I feel that I work in a good team
	B13	I am satisfied with my job
Proactive behaviour	B11	I am committed to my company
(PROACT)	B16	I can see problems in my company
	B17	I try to improve my work
	B18	I have ideas on how to solve some problems in the company

We assumed that both constructs are shaped in a reflective way. To measure latent variables in the model we used self-developed scales. The "job satisfaction" variable was equipped with three manifest variables and the "proactive behaviour" with four. Initially more variables were used, but using Cronbach's alpha coefficient we eliminated variables which were inconsistent with others in both constructs. This also explains the lack of consequence in variable numbering. Variables used in the measurement model are shown in Tab. 1.

Manifest variables were measured with 5-point Likert's scale, from 1 – "I do not agree at all" to 5 – "I extremely agree".

2.2 The Sampling Method

Manifest variables were measured in a survey. The survey questionnaire was set up and put together by the authors. The questionnaire consisted of two parts: part A described the profile of the employee: gender, age, seniority, industry, position in the organization. In section B of the questionnaire, we measured 20 variables related to such constructs, as: proactivity, job satisfaction, pro-development attitude of the employee.

The questionnaires were distributed in various companies in the Bielsko Subregion (Silesian Voivodship, Poland), using snowballing method. We distributed over 500 questionnaires, 360 returned (so, we reached return ratio over 70%). Finally, after verification of the questionnaires, the model was tested on the sample of 292 employees. Tab. 2 shows the structure of the sample.

Tab. 2: Structure of the sample

Feature	Number of employees	Percent
Gender:		
Male	111	38.0%
Female	181	62.0%
Branch:		
Production	115	45.1%
Building	9	3.5%
Commerce	33	13.0%
Commercial services	51	20.0%
Non-commercial services	47	18.4%
Job experience:		
Less than 5 years	191	65.1%
5 to 10 years	71	24.3%
Over 10 years	31	10.6%

2.3 Data Analysis

To determine the model we used procedures of structural equation modelling implemented in STATISTICA 12.5. The application uses covariance methods of estimation. For the purpose of our analysis we used mixed method: GLS (General Least Square) and ML (Maximum Likehood).

3 RESULTS

3.1 Measurement Model

As stated before, the measurement model consisted of 7 variables, evaluated on the scale of 1–5. Descriptive statistics of the variables reveal, that among respondents the statement representing variable B17 (I try to improve my work) has the highest level of approval and the statement representing B13 (I am satisfied with my job) the lowest one. Other descriptive statistics are shown in the Tab. 3.

We tested measurement model using Cronbach's alpha coefficient and item-to-item correlations. For the job satisfaction alpha reached the value of 0.726 and for the proactive behaviour 0.737. It is frequently assumed that these values should be larger than 0.7 (Esposito Vinci et al., 2010). In our case this level was reached which means that both scales have sufficient internal consistency and can be used as the measurements of the latent variables. Statistical regression confirmed that all path coefficients between latent and manifest variables are statistically significant. Results of measurement model evaluation are shown in Tab. 4.

Tab. 3: Descriptive statistics of the measurement model

Latent variables	Manifest varibles	Mean	Median	Standard deviation
SAT	B1	3.85	4.00	0.83
	B2	3.97	4.00	0.96
	B13	3.69	4.00	1.08
PROACT	B11	3.75	4.00	1.05
	B16	4.03	4.00	0.82
	B17	4.21	4.00	0.73
	B18	3.93	4.00	0.86

Tab. 4: Evaluation of the measurement model

Latent variables	Manifest varibles	Path coeff.	p	Cronbach's alpha
SAT	B1	0.570	0.000	0.726
	B2	0.816	0.000	
	B13	0.653	0.000	
PROACT	B11	0.569	0.000	0.727
	B16	0.431	0.000	
	B17	0.374	0.000	
	B18	0.431	0.000	

3.2 Structural Model

In our simple micromodel we only had one inner path representing the introduced hypothesis. The results of modelling indicate that we have achieved the regression coefficient equal to 0.652, connected with it standard error value of 0.102 and calculated t-statistic 6.367 which gave p-value, accurate to three decimal places, as equal to 0.000. It means that obtained path coefficient is statistically significant at level lower than 0.001, and the assumed hypothesis is supported. The results of modelling are presented in Fig. 2.

Tab. 5: Summary of all model fit indices

Index	Value	Evaluation
χ^2	115.27	
df	13	
χ^2/df	8.8	too big
RMSEA	0.13	too big
GFI	0.905	good
AGFI	0.795	acceptable
NFI	0.810	too low
NNFI	0.718	too low

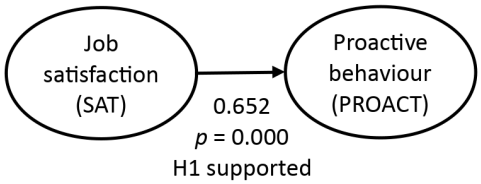

Fig. 2: Result of structural equation modelling

3.3 Model Fit

Unfortunately overall model fit is not satisfactory as only general fit indices are on an acceptable level (GFI = 0.905, AGFI = 0.795). The χ^2/df ratio exceeds traditional threshold value of 3 or sometimes acceptable 5 (Hu and Bentler, 1999). Fit indices: normed (NFI) and non-normed (NNFI) also give unsatisfactory results. In some literature the RMSEA index is considered as one of the most informative criteria (Matzler et al., 2005). In our case its value significantly exceeds the required < 0.05 or the acceptable < 0.10 range (Biesok and Wyród-Wróbel, 2016).

Therefore we have to confirm that the fit of the model is insufficient. All fit indices are gathered in Tab. 5.

4 DISCUSSION AND CONCLUSIONS

In this paper we emphasized the relations between job satisfaction and proactive behaviour. Both constructs are complex so are the relations between them.

The phenomenon of proactive behaviour (or proactive personality) is a field of intense research since 90's. Despite numerous studies about proactivity, some scholars, e.g. Bindl and Parker (2011) state that at the moment, little is known about the temporal linkages between antecedents and proactive behaviour, such as how long it takes for work characteristics to promote or prevent proactive behaviour, or the time it takes for proactive behaviour to unfold and influence well-being or performance.

Proactive behaviour has a positive influence on how people are perceived by others and it may result in a variety of positives consequences, including better work relationship (Bateman and Crant, 1999). Thus proactivity and its influence on organisational behaviours and relations was a matter of concern of various studies.

Researchers showed linkage between proactivity and careers (e.g., Seibert et al., 1999), affective commitment (Den Hartog and Belschak, 2007), confidence, self-efficacy, and engagement (Crant, 2000; Seibert et al., 1999), social integration (Wanberg and Kammeyer-Mueller, 2000) and many more.

Bindl and Parker (2011) summarized these impacts at three levels: individual outcomes, team outcomes and organisational outcomes.

Our paper shows relation between proactivity and the job satisfaction. Most previous studies investigated and verified the relationship between these concepts (e.g. Bateman and Crant, 1993; Crant, 1995; Crant and Bateman, 2000; Wanberg and Kammeyer-Mueller, 2000; Ng et al., 2005). However in those studies the job satisfaction was an effect of proactive personality. We put forward a reversed hypothesis which has also been positively verified. It shows that the reversed relation makes sense, should be verified in future studies and can be integrated in larger models.

Previous studies do not indicate such a direction of the relationship. However several works can be found verifying a positive influence of similar construct on job satisfaction. For example Rue and Byars (2003) concluded commitment to organisation as an effect in a model

of job satisfaction, Salanova and Schaufeli (2008) proved influence of work engagement on proactive behaviour.

All these constructs are interrelated. Thus in this field of research, according to Agho et al. (1993) researchers must examine the combined effects of environmental (opportunity), job characteristics (routinization, distributive justice), and personality (positive affectivity, work motivation).

The limitation of our study is non-representative data. Choosing the method of snowballing we had the opportunity to reach many respondents, but we lost control of the process of data obtaining. It is very hard to predict how the structure of the sample will shape if using snowballing.

The second limitation is the model fit. The model is verified but the fit is not the ideal. Poor fit requires a verification of the model measurement, increases the consistence of the variables within the constructs.

Measuring job satisfaction and proactivity is problematic. According to Bindl and Parker (2011) the issue with measuring proactive behaviour over time lies in its dynamic nature, because proactivity influences the situation and the situation influences proactive behaviour. Scales used in our study are very simple (for example Bateman and Crant (1993) used 17-item scale for measuring proactivity) and in future studies we will have to develop more precise scales.

The third limitation is that the model is simple. Increasing the amount of latent variables can change the image of the relation and the degree of impact.

And the last constraint of our study is that employees were working in companies in narrow region (the Bielsko Subregion). That's why we cannot fully generalise the results of the study.

Future studies will require a larger sample and more variables in the measuring model so that the most inconsistent result can be eliminated.

They should furthermore examine the relation between job satisfaction and proactive behaviour bilaterally to determine which direction of the relation is more important.

Last but not least, they should be expanded to include international companies enabling the researchers to carry out the surveys on a larger scale and not just within Poland, at the same time making it possible to compare the result and impact with the Polish companies.

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A COMPARISON OF LIVING STANDARDS INDICATORS

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ABSTRACT

The paper is a comparison of living standards indicators as a measure of the prevailing situation for the citizens of selected EU countries. The indicators used for comparison were representative of economic, social and environmental influence factors. The indicators were compared by means of meta-analysis, comprising a selection of all 11 chosen indexes (with a set of calculated indicators) and living-standards focused studies. The selected methodology for the meta-analysis is a weighted multiple linear regression. The results of the meta-analysis point to those studies whose indexes show a positive effect and indexes which show a negative effect as regards living standards.

KEY WORDS

living standards, indicator, comparison, meta-analysis, cluster analysis

JEL CODES

I31, I32

1 INTRODUCTION

Living standards (standard of living) is the term used to sum up the conditions a person or a nation lives under, and also helps to shape. Over time, this concept has seen a range of definitions, largely determined by the particular discipline within which each definition arose. Moreover, there is no unequivocal consistency in the approach to living standards within each of the given disciplines. The major scientific disciplines that concern themselves with the subject matter of living standards are first and foremost economics, sociology and psychology. Living standards are often associated, and sometimes confused with, quality of life and well-being. Together with the definition of the concept, the need arises for quantifiable indicators (metrics). From an economic point of view, living standards are assessed from a material standpoint, mostly at governmental level. The guiding factors are therefore the

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levels of income, consumption, or unemployment. The most commonly used and also most sharply criticized living standards indicator is Gross Domestic Product calculated per capita. Many economists take GDP per capita growth as the ultimate goal, but Krugman and Wells (2012) argue that it is not sufficient when judging human well-being and is by itself insufficiently useful as a policy-making decision tool. GDP per capita is not a direct reflection of the standard of living, but one of its many determining factors. While recognizing all the shortcomings of GDP as an indicator of living standards and the growing criticism of it in the course of trying to resolve the dubious aspects of GDP as a gauge of living standards, other indicators have been developing gradually over time, based on the initiatives of the UN, the OECD, the World Bank, the European Union, as well as other entities.

Večerník (2012) explains the concept of using a term of a multi-dimensional welfare, which is the quantification factor of living standard. An important stimulus to his pursuit was the Sarkozy report, which was prepared by the Commission of economists led by Stiglitz, Sen and Fitoussi. According to them, is the well-being affected by external factors, which are the material standards of living (income, consumption and wealth), health, education, personal activity, including work, social contacts and relations, the political environment, natural environment, personal and economic uncertainty (Stiglitz et al., 2007).

A given indicator exists to give an easily understandable entry point toward understanding what is going on in society, to help find our way around the given situation and subject area and to provide a body of objective information to stakeholders – particularly politicians, so that the appropriate measures can be adopted, to improve their decision-making and to avoid or mitigate the impact of crisis situations. The plethora of newly-emergent indicators, and their indexes, make the situation less clear, and these metrics, instead of contributing to simplifying the monitoring of living standards, act rather the contrary. This is why it is worthwhile to make a considered comparison of the respective indicators, to seek out a consensus as to their explanatory power, to look for suitable methods of monitoring their explanatory capabilities and thus to contribute to simplifying how people's living standards can be monitored, while recognizing the complexity of a population's standard of living and the multiplicity of factors that impinge upon it. This is the concept and objective of the present paper.

2 METHODOLOGY

The standard of living and more particularly how it may be quantified is a topic that many authors have focused on and published studies about. This fact opens up the option of addressing the same issue by applying the technique of combining and joining together the findings of primary studies, and so contributing to making research studies more effective. The method in question is meta-analysis with all the positives and negatives that it brings to the subject under study. The qualitative criterion for applying meta-analysis is that there are a number of indexes from economic, social and environmental domains (Tab. 1).

The comparison of the selected indexes[1] will be carried out using meta-analysis, which refers to a statistical method for the combination of findings from various studies. In the first step of the meta-analysis all the indexes have to be sought out, together with studies designed to measure living standards, selecting those that are suitable for further processing. Regression models are to be created for the respective indexes, related to the last available year, and to all the countries of the world they encompass. For each index a set of indicators is then calculated (for more details see Tab. 2), forming the basis for extracting the necessary data,

[1]GDP, GSI, GCI, HDI, QLI, BLI, LPI, SSI, CPI, EPI and HPI

Tab. 1: Living standards indexes

Index group	Index name	Abbreviation used
Economic	Gross Domestic Product per capita	GDP/HDP
	Genuine Saving Index	GSI
	Global Competitiveness Index	GCI
Social	Human Development Index	HDI
	Quality of Life Index	QLI
	Better Life Index	BLI
	Legatum Prosperity Index	LPI
	Sustainable Society Index	SSI
	Corruption Perceptions Index	CPI
Environmental	Environmental Performance Index	EPI
	Happy Planet Index	HPI

Tab. 2: Input data for meta-analysis

Name	Description	Type of variable
Study	name of study (index)	string
Variables	names of variables	string
Nlb	size of the observed group, calibrated	integer
NCb	size of the control group before calibration	integer
NCa	size of the control group, calibrated	integer
mean(la)	mean effect, observed group, calibrated	real
mean(Cb)	mean effect, the control group, calibrated	real
SD(la)	standard deviation of the effect, observed group, calibrated	real
SD(Ca)	standard deviation of the effect, control group, calibrated	real
MD	mean difference MD = mean(la) − mean(Ca)	real
ICI95(MD)	lower bound of the 95% confidence interval for the mean difference	real
uCI95(MD)	upper bound of the 95% confidence interval for the mean difference	real
ICI95(la)	lower bound of the 95% confidence interval for the mean of the observed group, calibrated	real
uICI95(la)	upper bound of the 95% confidence interval for the mean of the observed group, calibrated	real
ICI95(Ca)	lower bound of the 95% confidence interval for the mean of the control group, calibrated	real
uICI95(Ca)	upper bound of the 95% confidence interval for the mean of the control group, calibrated	real
p-value	p-value for the two-sided test	real
t-value	t-value for the two-sided t-test	real
df	degrees of freedom for the two-sided t-test	real

encoding, and monitoring the quality of the encoding.

The approach chosen for the implementation of the meta-analysis is weighted multiple linear regression, to detect the influence of moderating variables on the size of the effect, so the research model can be represented by

$$\text{effect} = f(X_1 + X_2 + \ldots + X_m), \qquad (1)$$

where X_i are the moderating variables, and f is the most common selector function for the linear combination influence of moderating factors.

The meta-analysis performed is based on the model of fixed effects (FES), which allows us to estimate the effect of the variability of individual studies on the overall effect. The model-derived estimate will be given a weighting according to the size of the given study.

Firstly, we shall need to assess the homogeneity of the selected studies. We consider studies homogeneous if the size of the effects of the respective studies equates to the actual overall effect estimated by the meta-analysis. In order to verify the homogeneity, we use the Cochran Q test, which posits the null hypothesis of study homogeneity

$$H_0 : T_1 = T_2 = \ldots = T_k = \overline{T}, \tag{2}$$

where T_k is the size of the effect k of the given study, $\overline{T}$ is the mean effect, i.e. the effect of all the studies, and k is the number of studies included in the analysis. The alternative hypothesis is that at least one T_k effect differs from the others. The Cochran coefficient is calculated as the sum of squares of the deviations of the effects from the overall effect estimate and takes the following form:

$$Q = \sum_{i=1}^{k} w_i \, (T_i - \overline{T})^2, \tag{3}$$

where w_i is the weighting of the i-th study.

It then holds that when the resulting value of the test statistic Q is greater than the critical value of the probability distribution at the α significance level for $(k-1)$ degrees of freedom, we reject the null hypothesis of study homogeneity.

The degree of heterogeneity is given by the I^2 index, which represents the portion of total variability explained by inter-study variability. It is calculated using the following formula:

$$I^2 = \begin{cases} \frac{Q-(k-1)}{Q} \cdot 100, & Q > (k-1) \\ 0, & Q < (k-1) \end{cases} \tag{4}$$

It holds that if $I^2 = 0$, the total variability of the effect is caused by a sampling error. If $I^2 = 25\%$, this means low heterogeneity, $I^2 = 50\%$ means moderate and $I^2 = 75\%$ indicates a high heterogeneity between studies.

As part of the analysis we will calculate the standard deviation (SD) and the standard error ($\mathrm{SE}_{\mathrm{effect}}$) for each element of the input studies:

$$\mathrm{SD} = \sqrt{\frac{\mathrm{SD(la)}^2 \cdot (\mathrm{Nla}-1) + \mathrm{SD(Ca)}^2 \cdot (\mathrm{NCa}-1)}{\mathrm{Nla} + \mathrm{Nca} - 2}}, \tag{5}$$

$$\mathrm{SE}_{\mathrm{effect}} = \sqrt{\frac{1}{\mathrm{Nla}} + \frac{1}{\mathrm{NCa}}}. \tag{6}$$

In the next step we calculate the effects of the study elements (*effect*) based on the ratio of the mean differences and the control group after calibration, and the standard deviation of the model:

$$\mathrm{effect} = \frac{\mathrm{MD}}{\mathrm{SD}} \tag{7}$$

In the final step, the confidence interval is calculated for each element:

$$\mathrm{CI95(effect)} = \mathrm{effect} \pm 1.96 \, \mathrm{SE}_{\mathrm{effect}}. \tag{8}$$

And subsequently we calculate the dispersion error bar values:

$$\text{value error bars} = \mathrm{SE}_{\mathrm{effect}} \cdot 1.96. \tag{9}$$

The effect of the size of each study is then the median of the sizes of the effects of the relevant results and the dispersion is the median of their deviations.

The results of the meta-analyses will be presented graphically, using a forest plot depicting the values of the effects and confidence intervals for the individual studies (Hendl, 2006; Kontopantelis, 2011; Nelson and Kennedy, 2009).

To compare how EU countries are categorized into groups on the basis of comparative indexes of living standards we apply multivariate statistical method – PCA-cluster analysis, the aim of which is to group the individual EU countries into clusters based on a cluster hierarchy. Clusters are formed on the basis of similarities and differences. The measure of similarity is based on the Euclidean distance of objects metric. The object clustering method of choice is the method of complete linkage. The result of the cluster analysis is a dendrogram (tree diagram) for each of the observed indexes that brings out which of the countries are similar to and correlated with one another (Meloun and Militký, 2012).

Tab. 3: Meta-analysis input indexes used

Group of indicators	Indicator	Variable	NCa
Economic	GDP	final consumption expenditure, gross capital formation, net export	38
	GSI	gross savings, fixed capital consumption, national net incomes, education expenses, energy consumption, the consumption of minerals, consumption of forests, emissions harm, carbon dioxide emissions harm	106
	GCI	institutions, macroeconomic environment, health and primary education, goods market efficiency, labour market efficiency, financial market development, technological readiness, market size, business sophistication, innovation	148
Social	HDI	life expectancy at birth, average length of schooling, expected length of schooling, gross national income	187
	QLI	purchasing power, security, health care, consumer prices, real estate prices against income, commuting time, pollution	67
	BLI	housing, income, work, community, education, public engagement, health, satisfaction, security, work-life balance	36
	LPI	economy, social capital, personal liberty, security, health, education, Government, business and opportunities	142
	SSI	eating, drinking, sanitation, education, healthy living, gender equality, income distribution, population growth, the Government, biodiversity, renewable water sources, consumption, energy usage, energy saving, greenhouse gases, renewable energy, organic agriculture, net saving, GDP, employment, public debt	151
	CPI	AFDB, BF (SGI), BF (BTI), IMD, ICRG, WB, WEF, WJP, EIU, GI, PERC, TI, FH	170
Environmental	EPI	health impacts, air quality, water and sanitation, water resources, agriculture, forestry, fishing, biodiversity and the natural environment, climate and energy	178
	HPI	life expectancy, well-being, ecological footprint	151

3 FINDINGS

We are interested in living standards from the economic, social and environmental points of view. Through the meta-analysis of selected indexes that measure living standards we shall be able to judge their effectiveness. To this end, we first sought out studies that set living standards metrics by means of specific indexes, which ultimately indicate the standard of living, well-being or quality of life of the various countries' populations. The analysis did not include data for all available years where this might be misleading. For example, the results of the Better Life Index were published for the first time in 2012, but this does not mean that this index rates lower than, say, the HDI, which was established in 1990. For this reason, the availability of data relating to the most recent possible year of published results, which had been set for 2013, was a prerequisite for included index selection. The results for all the countries the respective studies cover were taken into account. An overview of the indexes included in the meta-analysis is shown in Tab. 3.

First, we need to assess the homogeneity of the reference studies, as a measure of the differences between them. The Cochran Q test result indicates the heterogeneity of the studies (scales), whereby homogeneity was rejected at the 5% significance level. This finding is confirmed by the value of the I^2 index, according to which the heterogeneity of the scales is very high ($I^2 = 99.78\%$), that is, 99.78% of the total variability of the model is due to the

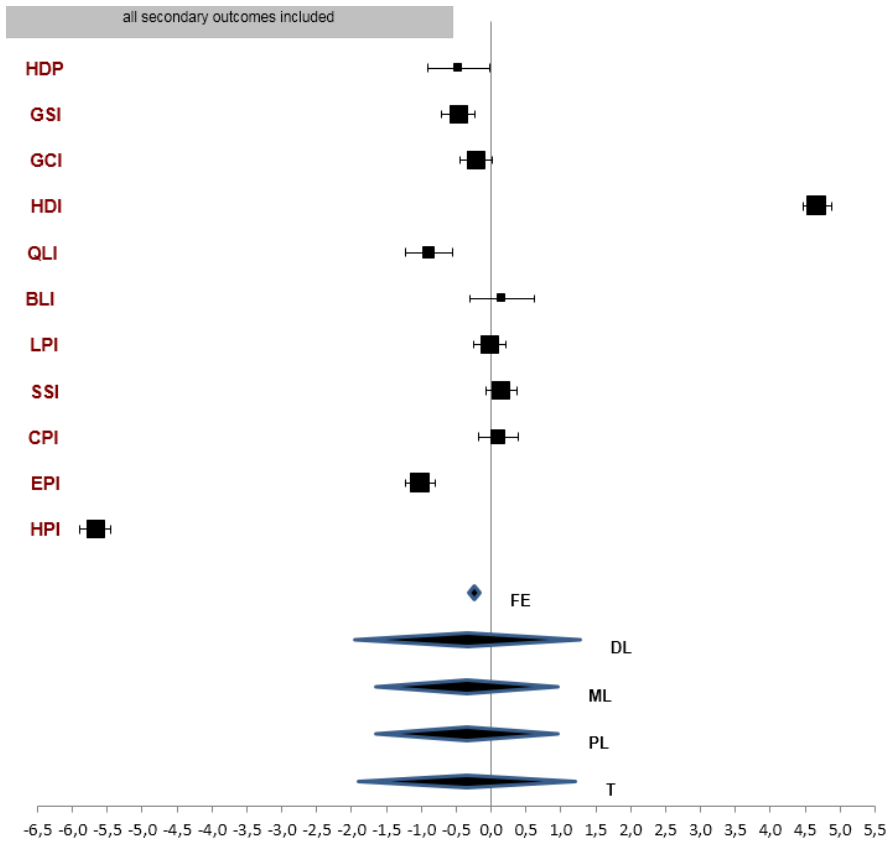

Fig. 1: Forest plot of the study effects

heterogeneity between the studies. This means the studies are not interchangeable.

Tab. 4: Measuring heterogeneity

	Value	df	p-value
Cochrane Q	4,582.60	10	0.0000
τ^2 estimate (DL)	7.7110		
τ^2 estimate (ML)	5.0145		
τ^2 estimate (PL)	5.0145		
I^2	99.78%		
H^2_M	457.2597		

A systematic review of the results of the meta-analysis is shown in the graph in Fig. 1, in the forest plot where the horizontal axis represents the size of the effect, the size of the squares of the individual studies shows the weighting of the study and the length of the segment shows the confidence interval.

The studies that show a marked positive effect on the overall model of living standards (shown in Fig. 1 to the right of the vertical axis) are HDI, BLI, SSI and CPI. This means that these indexes contain elements that have a positive impact on living standards. The HDI index has an effect of size 4.6753, which is significantly more than that of the BLI (0.1573), the SSI (0.1493) and the CPI (0.1025). Within the elements covered by the HDI the most significant impact on living standards is that of life expectancy at birth, and conversely the least being gross national income.

The BLI covers elements some of which raise and others depress the standard of living. Those with a negative effect include, first and foremost, income, then public engagement and housing. A neutral effect is found when it comes to life satisfaction. The element with the largest positive impact is safety & security.

In the SSI study some items have a positive, some a negative impact. The positive effect is that of having renewable water sources, gender equality, health, education, good sanitation, satisfactory food and drink, net savings or the size of the public debt. By contrast, GDP, employment, consumption, energy, the Government, population growth and distribution of income have been shown as having a negative effect. The use of energy, greenhouse gases and biodiversity do have a positive effect, but close to zero. With these results, it is clear that among the positives are social and ecological, or nutritional factors. Of the economic items, applicable are only the real savings indicating the country's sustainable development, and the public debt, which is closely linked to servicing the national debt, which forms a significant part of the State budget. Public debt thus has an impact on the living standards of the population, because its level leaves no room for other significant elements that can directly improve the quality of life of the people, or to mitigate the impact of negative factors. Countries are compared internationally by public debt, leading to certain stereotypical prejudices that influence how the inhabitants themselves are judged. The remarkable thing is that GDP has been found to have a negative effect (as is the case with GDP indicator observed separately). Other economic indicators also have a negative effect within the SSI. Higher consumption does not in itself mean a better standard of living. Other elements appear to be more fundamental.

The Corruption Perception Index (CPI), and its constituent elements, has a mostly positive effect on living standards. This then means that the better the circumstances in terms of corruption, the more scope for the inhabitants' well-being.

According to the results of the meta-analysis, all of the GDP elements calculated by the expenditure model method have a negative effect on overall GDP. The largest negative effect within this indicator comes from net export, followed by gross capital formation and, lastly by the final consumption expenditure. Consumption tends to be used in economics as a synonym for a certain standard of living. It turns out that in the overall assessment based on all the factors involved in the 11 reference indicators, consumption has a negative effect, meaning it does not increase well-being.

The LPI prosperity index has a slightly negative, generally neutral effect. The positive factors within this indicator are the economy, business opportunities and personal freedom.

The smallest effect, -5.6720 in size, was found in the Happy Planet Index (HPI). Of its three indicators only one had a positive impact; life expectancy. The ecological footprint affects the standard of living in the negative, thus reducing how well the population fares. Well-being also lowers the standard of living.

The GSI (Genuine Savings Index) contains indicators that reduce the standard of living. At issue are primarily those associated with environmental problems, such as damage caused by carbon dioxide, harmful emissions, wasteful utilization of forests, minerals and energy, but also expenditure on education. A positive impact is seen from net national saving (gross savings, consumption of fixed capital).

Although the Global Competitiveness Index, judging by the results of the meta-analysis, appears to have a negative effect on overall standard of living, its component indicators such as the efficiency of the labour market and the goods market, the macroeconomic environment and most notably health and basic education have a positive effect on the standard of living. Most of these items are indeed closely linked direct to people's lives.

The Quality of Life Index (QLI) has a negative effect in the overall living standards model, mostly due to the house prices to income ratio indicator. The higher the ratio, the more property prices are beyond the reach of the populace, causing them to fall into debt if they want to own property. Time spent commuting to work and pollution levels also have a negative effect on the population's well-being. Interestingly enough, health care and safety within the QLI show a negative effect, while the opposite is true in the BLI.

There is a relationship between the weighting and the accuracy of the study. We can see

from the forest plot that studies with a greater weighting show a tighter confidence interval. The studies' estimated effect sizes are shown in Tab. 5.

Tab. 5: Index effect sizes

Study	Effect	Lower 95% CI	Upper 95% CI	Error bars
GDP	−0.4603	−0.9070	−0.0135	0.4468
GSI	−0.4700	−0.7120	−0.2279	0.2420
GCI	−0.2091	−0.4370	0.0187	0.2278
HDI	4.6753	4.4726	4.8780	0.2027
QLI	−0.8965	−1.2351	−0.5579	0.3386
BLI	0.1573	−0.3047	0.6193	0.4620
LPI	−0.0202	−0.2528	0.2124	0.2326
SSI	0.1493	−0.0763	0.3748	0.2256
CPI	0.1025	−0.1771	0.3822	0.2796
EPI	−1.0161	−1.2238	−0.8083	0.2078
HPI	−5.6720	−5.8976	−5.4465	0.2256

The HDI has the greatest weighting, because its published scores for the reference year encompass 187 countries. Conversely, the index with the smallest weighting index is the BLI, because its published scores encompass only 36 countries. These are OECD Member States, while additionally tracking Russia and Brazil. Despite the fact that the most commonly used indicator of standard of living is still GDP per capita, its weighting in the analysis conducted is the second lowest. This is due to the fact that in order to compile the input data we had to work with the indexes separated out. GDP per capita details for the individual components of the expenditure method of calculation were available for only 38 countries.

The study weightings shown in the chart correspond to the fixed effects model (labelled FE on Fig. 1), which underlies the meta-analysis calculation. From it we were able to estimate the impact of the studies on the overall standard of living model effects (Tab. 6).

The results of the meta-analysis revealed that many factors expressed as economic indicators have a negative effect on living standards. This even applies to the GDP itself, considered overall. Some of the values differ between indexes, when comparing similar indicators, due to the differing calculation methodologies. One clearly positive influencer is life expectancy, as well as other components of the HDI, followed by satisfactory eating and drinking or gender equality, but also low corruption State-wide.

Tab. 6: Model effects

	Mean eff	Var eff	l95%CI	u95%CI
FE model	−0.2244	0.0015	−0.3005	−0.1484
DL model	−0.3327	0.7031	−1.9761	1.3107
Q model	−0.3327	0.7031	−1.9761	1.3107
ML model	−0.3327	0.4579	−1.6590	0.9936
PL model	−0.3327	0.4579	−1.7829	1.1175
T-test	−0.3327	0.5017	−1.9109	1.2454
PE method	−0.3327	NA	−2.6644	0.6595

The results could well have been different if, e.g. the Better Life Index were scored for more States. This is an OECD initiative, and is thus scored for only 34 Member States and 2 other States. Due to the fact that the input data to the meta-analysis are regression models (based on the results of only one year), if the BLI were calculated for the whole world the effect of this study as well as the indicators could differ. The differences could be associated with differences between objective and subjective indicators and the various methodologies used in the calculation.

The analysis results show that the majority of the indicators included in the indexes observed have a negative effect on standard of living, meaning they lower the well-being of the people. The Government should strive to reduce their influence, or to obviate them. Particularly so in the case of the ecological harm factors, such as air pollution.

Further research would benefit from including a greater number of studies, which could not be included in this meta-analysis due to limited access to detail-level results. The living standards domain would warrant conducting several separate meta-analyses in light of the fact that this subject area is very broad and under the influence of a large number of determining factors.

Looking at Tab. 8, which shows the results of the cluster analyses by social indexes, we see that the reference countries monitored stand apart in the case of BLI. The CPI

Tab. 7: Clustering of countries by economic indexes

GDP	GSI	GCI
RO, PL, MT, SK, LU, EE, LT, BG	HL, UK	SI, ES, PT, IT, HL
UK, IT, SI, HR, ES, CY, HL, HU, LV, PT, IE	SK, LU, SI, CZ	LV, EE, MT, CY
FI, SE, AT, FR, DE, NL, CZ, DE, BE	HR, FR, ES, PT, IT, FI, BE	PL, LT, CZ
	RO	RO, HU, HR, SK, BG
	PL	LU, SE, FI
	IE, SE, NL, EE	UK, IE
	BG, DK, HU, DE, AT	FR, NL, DE, BE, DK, AT

Tab. 8: Clustering of countries by social indexes

HDI	QLI	BLI	LPI	SSI	CPI
PL, SK, HU, LV, LT, EE	SI, LT, EE	EE	ES, SI, PT	LU, SI, SK, PL, SE, DK, EE, FI, CZ	SI, EE, PL, HU, CZ
BG, RO, HR	ES, SK, PT, CZ	PT, IT, EL	LT, EE, SK, PL, IT, CZ, HU, CY	LV, LT, HR, RO, BG	SK, LT, LV, HR, RO, BG
MT, CY	EL, RO, PL, HR	SI, PL, HU, SK, CZ	EL, LV, HR, RO, BG	PT, ES, IT, EL, MT, HU, IE, CY	ES, PT, IT, EL
PT, IT, ES, EL, FI	HU, BG	FI, SE, DK	SE, UK, NL, IE, FI, DK	UK, FR, NL, BE, DE, AT	LU, IE, MT, CY
IE, NL, DK, UK, DE, SI, CZ	IE, FR, BE	ES, IE	LU, MT, FR, BE, DE, AT		SE, FI, DK, NL, BE, UK, DE, FR, AT
LU, SE, AT, FR, BE	UK, NL, FI	LU, DE, FR, NL, BE			
	DE, DK, SE, AT	UK, AT			

sorts the countries into clusters such that they form groups for which the status observed is very similar to most of the charts used in the preceding chapters. Finland, the United Kingdom and France are in one group, and Spain and the Czech Republic are in separate groups. We can make similar interpretations in the case of the QLI and LPI.

In view of the fact that the respective EU countries use a variety of indicators for the various indexes of measuring the standard of living, it can be expected that the European Union will separate out into different groups, according to the indexes used. To this end we carried out cluster analysis across all the indexes.[2] Here too the indicators were divided up into economic, social and ecological. The cluster analysis encompasses all the EU countries for 2013, while tracking the standings of 5 reference countries.

Tab. 7 provides an overview of groups of countries by GDP, GSI and GCI. It turns out that only in the case of GCI are the reference countries in separate groups. The Czech Republic is in a group with Poland and Lithuania, Finland with Luxembourg and Sweden, France with the Netherlands, Germany, Belgium, Denmark and Austria. The United Kingdom is with Ireland, and Spain with Slovenia, Portugal, Italy and Greece. These groupings closely reflect the divisibility of the EU by zones of cultural affinity. It could be said that the influence of culture is reflected in the 12 pillars of competitiveness that the GCI monitors. As for the GDP per capita, the reference countries are in two groups and in the case of GSI in three groups. It turns out that the groups are not coherent by economic indexes, because in terms of GDP the United Kingdom and Spain are most alike, and Finland belongs

[2] All the available data for 2013 were used.

Tab. 9: Clustering of countries by environmental indexes

EPI	HPI
HU, IE, RO, HR, CY, BG	PT, CZ, EL, SI, MT, CY, SK, PL, HR
MT, LV, LT, EE	LT, EE, RO, LV, HU, BG
ES, PT, SE, FI, HL, DK	LU, DK
IT, PL	ES, IT, UK, DE, FR
FR, UK, DE, NL, BE	BE, NL, IE, FI, SE, AT
SI, CZ, SK, AT, BE	

in a group with France and the Czech Republic. In terms of GSI the United Kingdom stands alone, while the Czech Republic and France, Spain and Finland are in the same group.

The last grouping is made using the environmental indexes. The results, which are illustrated in Tab. 9 show that the country groupings are similar. When we take into account only the reference countries, only Spain takes a different position, by using the EPI siding with Finland, and using the HPI grouped with the United Kingdom and France. The Czech Republic is elsewhere in both cases, but each time with different Member States.

When comparing the results of the cluster analyses for each of the indexes we see that the country clusters are always different. In some instances, there are certain similarities, but none of the indexes gives a clustering of the countries like another. This finding is essentially a manifestation of the study homogeneity findings, which demonstrated the high heterogeneity of the indexes. This diversity is also why the Member States cluster into groups in diverse ways.

4 CONCLUSION

The results of the meta-analysis have shown that the studies with a positive size effect on the overall living standards model (shown to the right of the vertical axis in Fig. 1) are the Human Development Index (HDI), the Better Life Index (BLI), the Sustainable Society Index (SSI) and the Corruption Perception Index (CPI). This means that these indexes contain elements that have a positive impact on living standards. The HDI has an effect of size 4.675, which is significantly higher than the BLI (0.1573), the SSI (0.1493) or the CPI (0.1025). Within the elements covered by the HDI the most significant impact on living standards is that of life expectancy at birth, the least by contrast being gross national income.

We can conclude from the meta-analysis results that all the elements of the GDP calculated by the expenditure method have a negative effect on the overall living standards model. The largest negative effect within this indicator comes from net export, followed by gross capital formation and, lastly by the final consumption expenditure. Consumption tends to be used in economics as a synonym for a certain standard of living. It turns out that in the overall assessment based on all the factors involved in the 11 reference indicators, consumption has a negative effect, i.e. does not increase well-being.

The meta-analysis undertaken does not improve the quality of the input data, but is merely their empirical summary. This means that the results are greatly influenced by the input data. The main limiting factor is the number of studies included, which was influenced by the available data. A problem with this analysis is what is known as publication bias, which lies in the fact that the public tends to be shown only positive results, i.e. good performance studies, thus distorting the conclusions of this analysis. While this fact has

not been addressed in our paper, it should not diminish the credibility of the findings with respect to the other analyses undertaken, which are conformant with the meta-analysis findings in many ways.

To eliminate the fact that the individual EU countries may use different indicators for the various indexes, we carried out cluster analyses separately for the economic, social and environmental index groups and took note of the minor differences found in the countries' clustering pattern.

Further research would benefit from involving more studies, for the greater validity of the findings. The living standards domain would warrant conducting several separate meta-analyses in light of the fact that this subject area is very broad and is influenced by a large number of determining factors. The results of applying exacting scientific methods clearly indicate that the standard of living is a very broad area that encompasses elements from many disciplines, and therefore requires inter-disciplinary cooperation in its investigation.

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NATIONAL CULTURE AND APPLICATION OF TELEWORK IN EUROPE

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ABSTRACT

This paper deals with cultural differences in states around Europe. People represent key resources of the companies where flexi forms are necessary way how to reach goals. Hofstede's Cultural Dimension Theory can find many answers. Application of new culture and flexi forms may improve work organization, working time and family life of employees. This paper utilizes survey data obtained from Hofstede Institute research fields and Eurostat database. Set hypotheses are supported by six auxiliary questions what help reach conclusions, how integration slowly cancelled national differences between nations.

KEY WORDS

telework, telecommuting, national culture, flexibility, dimensions

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1 INTRODUCTION

Twenty-first century started the examination of the trends for a number of Management Theories. The organization is understood as a living entity, the focus is on the selection and formation of staff. In the foreground is to focus on needs and achieve common goals. Adaptation, teams, groups and flexible organizational culture will bring successful company.

Employers primarily try to increase work efficiency and to ensure the continuous operation of the business. Some employment flexibility can be potential for increasing employment in terms of "redistribution of work" for a larger number of workers (van Lomwel and van Ours, 2003).

The term flexibility should be more understood as an adaptation to sudden changes in the situation that has arisen with the purpose to extract something thriving and efficient for individuals and organizational culture. In a

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similar way, Ailenei and Bunea characterize the labour market flexibility. Basis of the law can absorb information flows, changes, mistakes and try to turn them into activities (Ailenei and Bunea, 2010).

The objective of employment flexibility should harmonize needs of the employees and the employers. Flexibility gives employees options to create individual work plan and increase their work efficiency. The implementation of flexibility may not be caused by the demands of business. Flexibility is often initiated by the employees themselves, which can lead to personal reasons, such as the obligation to care for family members, home care, study or other activities which prevent them from performing work full time (Rodgers, 2006).

Telework recorded the highest growth in recent years. Increasing numbers of teleworkers are not exclusively the result of the employers needs to adjust to the market requirements, but it occurs due to the higher availability of ICT products and faster Internet connection. Various sources reported in different countries, different number of employees working in the form of telework. Authors sometimes counted only formal full-time teleworkers, Contract Teleworkers or Once Week Teleworkers, in the Western Europe are known as the "Home Office". Teleworkers have a standard contract of employment in the organization for eight hours daily, but getting the opportunity to work from home a flexible number of days. This number is nowhere precisely defined as formal terms of the oral agreement between employers and employees. Walinskas states that contract teleworkers, employee teleworkers or "Home Office" in the world have over one billion employees (Walinskas, 2015).

2 THEORETICAL FRAMEWORK

2.1 Telework (Telecommuting)

The definition of telework in the European Framework Agreement is kept deliberately broad. Article 2 of the European Framework Agreement on Telework of 2002 stipulates that: "Telework is a form of organizing and/or performing work, using formation technology, in the context of an employment contract/relationship, where work, which could also be performed at the employer's premises, is carried out away from those premises on a regular basis" (Eurofound, 2002). While this definition allows for wider agreement on the definition in the European Member States, the lack of a clear and ambiguous definition presents a problem for measuring and comparing the incidence of telework across countries. A slight deviation from the definition in the agreement appears in the EWCS (European Working Conditions Surveys) that measures only telework "from home", while the European Framework Agreement covers workplaces away from the employer's premises other than home as well. This deviation, however, can be considered negligible, since the evidence from other national and sectoral statistics show that "home" is a work site for the large majority of teleworkers. Since telework is relatively new, the majority of countries have just started gathering statistics on telework, therefore, the national data do not yet have a solid ground (Baltina, 2012).

The term "telework" (telecommuting in the US) was coined by Jack Nilles in 1973. It widely spread primarily at the beginning of the 21st century. Its growth was not prompted exclusively due to the companies reactions to the market needs, but also thanks to the fact that ICT products turned to be less financially demanding and the fast Internet coverage spread. At present, based on the Reuters data every fifth employee in the world works in the telework mode at least a part of working week (Reaney, 2012).

2.2 Categorization of Telework

To interpret the data provided by surveys more reliably, the most commonly used categoriza-

tion of telework forms must be introduced. It can be categorized by the place of performance as part of localization flexibility, as follows (Wojčák and Poláková, 2014): (a) *Home Office* – represents the form in which the employee works at home utilizing ICT. (b) *Satellite Centre* – is the form in which employee works in a centre established by the employer outside the employer's premises, e.g. at the client's place. IT programmers or database administrators are the occupations working typically in this mode. (c) *Street Work* – is the form in which the employee works at a public place, e.g. in a café or at means of transport. This form has been implemented just recently due to the accessibility of the Internet and new developments of mobile devices.

2.3 Telework Application

To answer the question of teleworking application, is necessary have to highlight their major advantages and disadvantages. The most serious problem with teleworkers is social isolation from the team of co-workers as agreed by a number of authors (Cooper and Kurland, 2002; Vega, 2003; Gajerndran and Harrison, 2007; Golden et al., 2008; Pyöriä, 2011). Problem is vented by the American Psychological Association and coincides with the results of research in the recent ten years presented at conferences and published in a monograph.

In understanding of communication solutions that result in the embedded telework, as we have in the case of communication: email, conferencing, video calls, as a variety of cottages: *Hangouts*, *Whatsapp*, *Facebook*, *Skype*, but they are not completely substitute for standard communication. A serious problem is usually the lack of understanding of organizational culture, or in an amendment notice to change staff behaviour (Thatcher and Bagger, 2011; Bullock et al., 2015).

Isolation results from the fact that teleworker is not during working hours in personal contact with co-workers. Personal communication face to face is preferred and also due to non-verbal communication. Another disadvantage of teleworking is awareness. Teleworkers may not have much correct information about what is happening in the organization (Wojčák, 2013).

2.4 National Culture and Hofstede's Dimensions

National culture is a set of creeds, values and standards that share a given social group, and that decisively influences the behaviour of members. This file has been building for a long time based on the collective experience to meet challenges that the group has faced and is facing, and therefore serves as a valid new members (Šajgalíková and Bajzíková, 2013). It is obvious that the organization itself is a culture for nations that develops, changes and reacts to changes (Denison, 1996; Schein, 2004).

Organizational culture is a small part it develops set of creeds, norms and formal customs on lower level what create nations and national identity over Europe. If culture is not shared with others in the group may occur misinterpretation which can lead to a gradual decline in the ability to navigate the organization and understand the reasons why they were ever made (Becker and Gerhart, 1996; Patti et al., 2004). This may result in that, teleworkers intrinsic job satisfaction often leads eventually to demotivation, because feedback can be often negative (Copuš, 2015).

In terms of dimension impact on national culture according to telework, is necessary to define what these dimensions are. One of his most notable accomplishments is the establishment of the Cultural Dimensions Theory, which provides a systematic framework for assessing the differences between nations and cultures. The theory is based on the idea that value can be placed upon six cultural dimensions (Hofstede, 2001; Hofstede et al., 2010). Dimensions are Power Distance Index (PDI), Individualism (IDV), Uncertainty Avoidance Index (UAI), Masculinity (MAS), Long Term Orientation (LTO) and Indulgence versus Restraint (ING).

High PDI – Low PDI

System is desirable and reflects the inequality gap among workers. Senior managers are mentors, those know answers. The high degree of symbolism, centralization and accepted response is social inequality, using the formal means of communication. Decentralisation is a typical sign of progress change (Adler and Gundersen, 2008).

High IDV – Low IDV

The degree to which people prefer to act as individuals rather than as members of groups. For individual expression is characterized by creativity a certain degree of futuristic thinking "say what they think is the basis for discussions". Collectivist culture relies on the power of the masses, where decision making is in the form of "We". Independence and autonomy in private life and in the workplace, form of thinking "I" (Triandis, 2002).

High UAI – Low UAI

Cultures that score high on this index are less tolerant of change and tend to minimize the anxiety of the unknown by implementing rigid rules, regulations, or laws. Time is money, strict rules are just top of the hill in very closed and conservative company culture (Hofstede et al., 2010).

High MAS – Low MAS

Cultures that are high on the masculinity scale generally have more prominent differences between genders to be more competitive and ambitious. Femininity stands for a society in which social gender roles overlap (Smith et al., 2008).

High LTO (Long Term) – Low LTO (Short Term)

It is therefore on adapting the concepts and innovation for the future. Slow recovery and persistence points to respect commitments have been made through the Social Fund and the socially binding. Low investments that have high returns expected results (Hofstede et al., 2010).

High Indulgence (51–100) – High Restraint (0–50)

Low stress rate, enjoying life, low emotional and feelings control, close relationships, where life is not too serious. In the first place is satisfaction, spending money for pleasure and fun. Pessimistic attitude with strict rules, negative and bad feelings is typical mark for restraint (Hofstede et al., 2010).

3 SURVEY OBJECTIVE AND METHODOLOGY

The main purpose of our research was to examine the reasons a the reasons for differences in the application of Telework within the EU countries between Hofstede's Dimensions of national culture and telework. We looked answers for basic research questions: *Does the diversity of national cultures influence extent of Telework contracts? What cause higher level of teleworking in countries?* We investigated relationship based on Eurostat data for 29 EU countries and their values belonging to different dimensions of Hofstede. The core data of telework used in the survey are reports on EUROSTAT, Hofstede Institute website, documents and guidelines of the European Union that were used in research, Excel calculations and finally interpreted in results.

To analyze methodological background was used logical induction, descriptive statistics synthesis and deduction in developing results and drawing conclusions. To determine dependence research was Pearson correlation coefficient calculated in Excel software. Panel regression was rejected for insufficient time data. Results are interpreted in graphic and narrative form and differences are discussed. The identity of the States in the creation of figures were used country code by ISO 3166-1

Tab. 1: Hofstede's dimension and percentage of teleworkers in European countries

Country	Country code	PDI	IDV	MAS	UAI	LTO	ING	Telework	Member
Austria	AT	11	55	79	70	60	63	10.8%	EU, EUZ
Belgium	BE	65	75	54	94	82	57	9.1%	EU, EUZ
Bulgaria	BG	70	30	40	85	69	16	0.5%	EU
Croatia	HR	73	33	40	80	58	33	1.1%	EU
Czech Republic	CZ	57	58	57	74	70	29	4.1%	EU
Denmark	DK	18	74	16	23	35	70	11.2%	EU
Estonia	EE	40	60	30	60	82	16	6.2%	EU, EUZ
Finland	FI	33	63	26	59	38	57	12.7%	EU, EUZ
France	FR	68	71	43	86	63	48	7.5%	EU, EUZ
Germany	DE	35	67	66	65	83	40	4.8%	EU, EUZ
United Kingdom	UK	35	71	43	86	63	48	3.8%	EU
Greece	GR	60	35	57	100	45	50	2.3%	EU, EUZ
Hungary	HU	46	80	88	82	58	31	3.9%	EU
Iceland	IS	30	60	10	50	28	67	7.8%	NON EU
Ireland	IE	28	70	68	35	24	65	2.3%	EU, EUZ
Latvia	LV	44	70	9	63	69	13	2.3%	EU, EUZ
Lithuania	LT	42	60	30	60	82	16	4.1%	EU, EUZ
Luxembourg	LU	40	60	50	70	64	56	12.7%	EU, EUZ
Malta	MT	56	59	47	96	47	66	2.1%	EU, EUZ
Netherlands	NL	38	80	14	53	67	68	13.9%	EU, EUZ
Norway	NO	31	69	8	50	35	55	5.3%	NON EU
Poland	PL	68	60	64	93	38	29	4.1%	EU
Portugal	PT	63	27	31	99	28	33	7.1%	EU, EUZ
Romania	RO	90	30	42	90	52	20	0.3%	EU
Slovakia	SK	100	52	94	51	77	28	3.7%	EU, EUZ
Slovenia	SI	71	27	19	88	49	48	7.4%	EU, EUZ
Spain	ES	57	51	42	86	48	44	4.3%	EU, EUZ
Sweden	SE	31	71	5	29	53	78	5.6%	EU
Switzerland	CH	34	68	70	58	74	66	4.8%	NON EU

Source: Hofstede (2017), Eurostat (2016).

Alpha 2. For Hofstede's Dimensions was used the following abbreviations – Power Distance Index (PDI), Individualism (IDV), Masculinity (MAS), *Uncertainty Avoidance Index (UAI)*, Long Term Orientation (LTO), Indulgence (ING).

H_1: *Diversity of national cultures influence extent of Telework contracts.*

H_2: *What cause higher level of teleworking in countries.*

For better results draw is necessary to set 6 questions: Exist significant correlation between the percentage and number of teleworkers rate for PDI, IDV, MAS, UAI, LTO, ING?

4 RESULTS

4.1 Correlation Coefficient Results

To determinate the existence of dependence between the application of teleworking and hosted dimensions was used Pearson's correlation coefficient calculated in Excel software. Research tried to find out answer on six auxiliary questions about national dimensions. Results of the investigation are shown in Tab. 2. Results show measurement dependency between Teleworkers (%) and selected dimensions. Highlighted rows point to significant dependence.

Tab. 2: Correlation coefficient between the percentage and number of teleworkers & Hofstede's dimensions

	Correlation coeff.
Teleworkers % / PDI	**−0.489**
Teleworkers % / IDV	0.011
Teleworkers % / MAS	**0.343**
Teleworkers % / UAI	−0.012
Teleworkers % / LTO	0.016
Teleworkers % / ING	−0.118

There are answers on two added questions, if exist significant correlation between percentage and number of teleworkers rate. Tab. 2 shows that major dimensions are PDI and MAS other low correlation coefficient or common dependence has not been demonstrated. Pearson's correlation coefficient calculated in Excel software.

The results of the analysis has dependence correlation coefficient −0.489 at PDI. This is a negative correlation coefficient of which shows that countries with low distance of power have a greater number of teleworkers. This indicates that, if the rate of power within the national culture is higher, telework applications contrary to a lower degree. In Fig. 1 is also seen declining representation in increasing PDI.

The correlation coefficient of 0.343 indicates the middle statistical dependence between the number of teleworkers and masculinity. This coefficient is positive, and concludes that states with higher rates of masculinity telework more frequently applied.

This indicates that, if the rate of masculinity within the national culture is higher, telework applications contrary to a higher degree. In Fig. 2 is also seen direct growth representation in increasing masculinity. Pearson correlation coefficient calculated in Excel software.

In the Fig. 1, for PDI is the result of an exponential equation as best describing the application of telework: Y represents number of teleworkers (%) and X represents value of Hofstede's PDI. In the Fig. 2, for MAS is the result of an linear equation as best describing the application of telework: Y represents number of teleworkers (%) and X represents value of Hofstede's MAS.

4.2 Results by European Integrity

Tab. 3 shows the average values for European regions set in Tab. 1. The rate of telework contracts is influenced by PDI and MAS. The established hypotheses and the auxiliary questions were answered and interpreted in the results. There is a new look that points to national cultural differences that have a direct impact on the application of flexi forms and telework application. Therefore, an alternative hypothesis, as an integration rate, can influence and change national cultures. Tab. 3 shows a different average rate of PDI and MAS. It is clear from the table that the WE have significantly more favourable values for the telework application, which is also largely confirmed. Eastern Europe does not contain complete data, it is missing from the number of Balkan states and non-EU states (Belarus and Ukraine) where there is not expected a significant rate of teleworking and influencing the results. On an alternative hypothesis, it can be said from the results that the integrity rate helps to reduce the difference between the West and the East in Europe.

Western Europe (WE) outside Soviet influence have a significantly lower average PDI, which, according to sources, shows a higher degree of flexibility and positioning for telework. West – old Member States have a lower level of PDI, which provides scope for informal

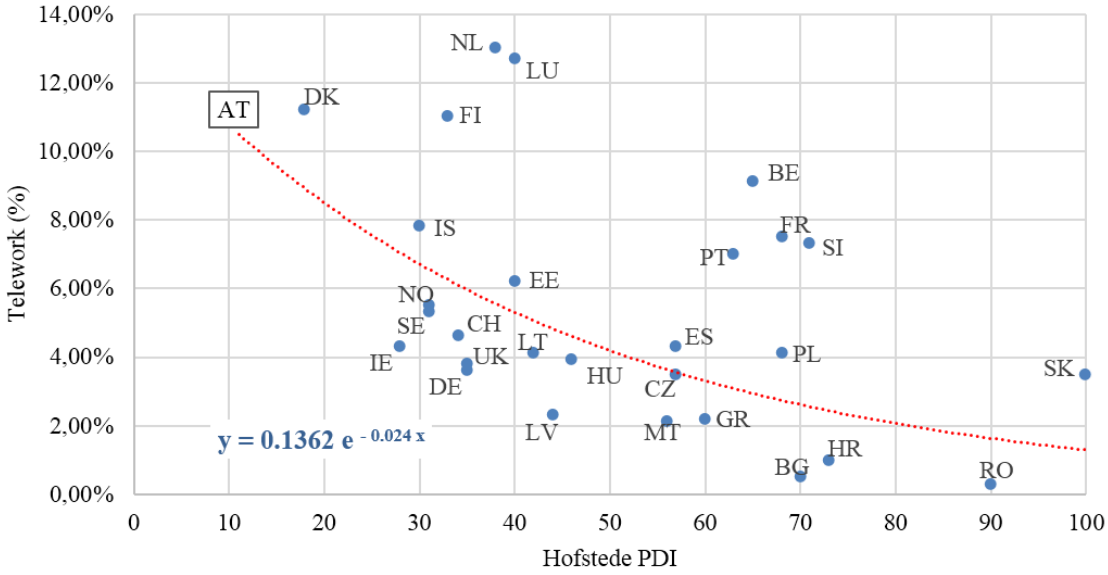

Fig. 1: Illustration of the application of teleworking (percentage of teleworkers per capita) in each country, depending on PDI (0–100)

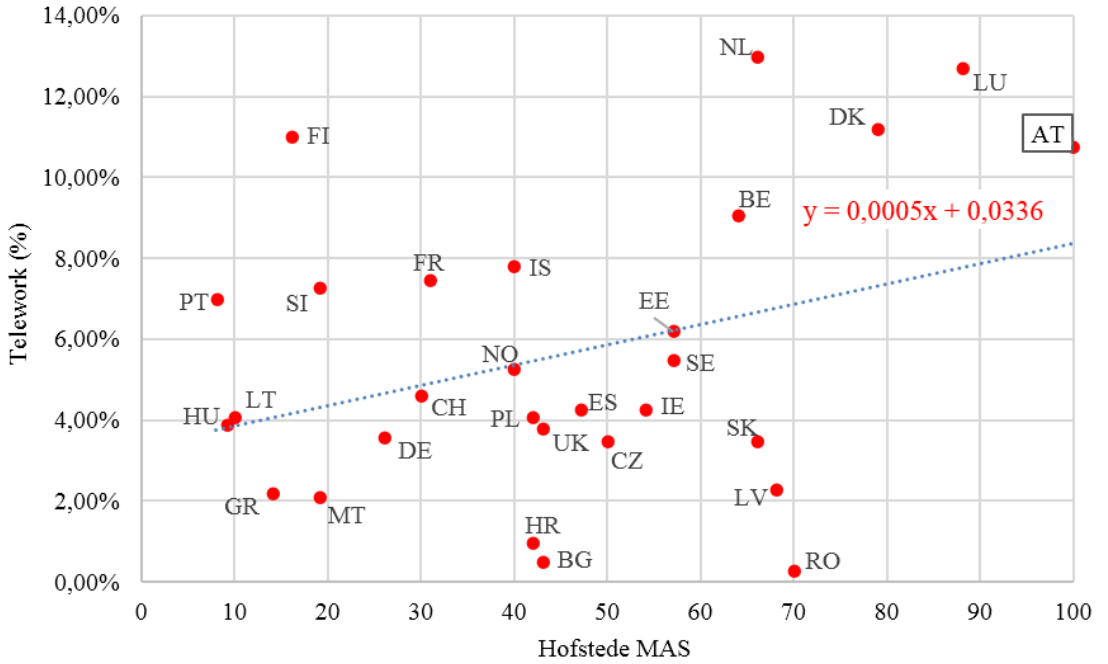

Fig. 2: Illustration of the application of teleworking (percentage of teleworkers per capita) in each country, depending on MAS (0–100)

management and achievement of goals. Similarities are visible in PDI measurement, MAS has dependency on local culture by nations and help realize employees needs.

The post-communist (CEECs) countries have a high level of PDI, but the MAS rate is more pronounced than that of regions and cultures in the region. There is still a measure of the

division of man and woman, technological and social progress in telework. The Baltic countries are more geared towards feminity, which is typical of MAS in the Nordic countries and in the Benelux countries.

Tab. 3: Average values by regions in Europe (PDI, MAS, Average percentage of Teleworkers)

	PDI	MAS	AVERAGE
WE	42.53	47.46	7.21%
CEECs	63.72	43.27	3.34%
NON EU	31.66	36.66	5.90%
EU	51.50	45.69	5.57%
EUROZONE	50.05	44.29	6.53%

Non-EU countries are based on Anglo-Saxon system is based on low PDI, emphasizes results where forgiveness can be forgiven, culture tolerates sex of balance, and is at the forefront of telework. Countries are only 3, which can distort results but definitely these countries are one of the most developed.

Eurozone average values are great mix of Western and Eastern countries integrated into currency union. Eurozone values show how may be cultural differences in selected countries reduced.

From these final results are acceptable hypothesis H_1 and H_2. *Diversity of national cultures influence extent of Telework contracts.* Cultural dimensions influence the level of telework, resulting from research, confirming the hypothesis and pointing to differences in EU countries. The most significant are PDI and MAS. For the hypothesis H_2: What is the result of the very different value of Hofstede's measurements – PDI and MAS, which has proven to be a dependency in research.

For the H_2, *What cause higher level of teleworking in countries*, hypothesis, an answer is also according to Tab. 3. The EU integration rate helps countries from other European countries to reduce cultural differences. If we compare statistical mean in WE a CEECS, there are visible differences among regions, countries. National culture definitely influences application of telework contracts in countries. Different values are clear proof of different attitudes, understanding and customs how culture is interpreted.

5 DISCUSSION AND CONCLUSION

In this paper, results show the interaction MAS and PDI when examining the dependence of the number of teleworkers. States with higher PDI have the lowest percentage of teleworkers, but it is the states with higher rate of MAS. Lower MAS is turning into feminity, where a higher correlation to the application of teleworking with femininity on quality of life. Because of the missing time horizon databases and the differences in the definitions of telework, it is very difficult to determine the salary entry data in the countries for the telework area. The absence of these data has momentarily prevented relevant research in statistical methods and using panel regression. Using induction, deduction can reveal that the height of average wage has dependence on flexible forms, but it is goal for another researches.

For the PDI and MAS dimensions, the difference in culture in Europe is considerable. In this case, it is necessary to divide the countries into five world parties and describe each. Likewise, the Iron Curtain remains, where the countries in the East developed in a different cultural environment than the Western Lands, which still divides Europe into two blocks.

The degree of dependence between PDI and the number of teleworkers has a correlation coefficient of 0.489 which is the upper limit. A higher rate frame sizes PDI represents such an organization in which it is difficult to have more equal relationship with a higher position in the organization.

The degree of dependence between the MAS and the number of workers has body correlation coefficient 0.343 that states with higher rates of masculinity slightly more frequently used teleworkers. For this mild dependence, masculinity is the perception of the organization, focusing on profit, to reduce costs, the competitiveness

among colleagues, the competitiveness that the organization moves forward.

Telework as a solution to social problems with transport, environment and opportunity for people to better organize their personal and professional life, the possibility of increasing knowledge, education, increasing independence and the consequent increase creativity and the possibility of a genuine contribution to the organization. It therefore appears that differences between cultures have significant similarities. Most Theories of Motivation are focused on content, process and on individual needs, goals and consequences. Intercultural research suggests that universal acceptance of these theories is problematic. There is no flexible "manual" how to adjust culture in companies over the world. Further formal relations in organizations must be changed. Successful companies have to melt barriers between positions and reduce PDI level over all positions. Managers head new challenges, in future they have to find out new ways how to apply those skills, innovate processes and motivate employees for another needs.

Informal attitudes contribute to open workplaces where the provision of flexible forms will help increase innovation and satisfaction, when employees will feel that they are makers of the organizational culture. Management needs to continuously edit the new knowledge and apply it in the field. These approaches are only poorly developed all over Eastern Europe mostly. The future will show how managers can deal with changes in the needs of employees, prevent fluctuations of the best people and reach goals.

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