METHODOLOGICAL ISSUES ON MEASURING EMPLOYEE WELLBEING

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Abstract

Quality of life at the workplace has a substantial impact on wellbeing of most adults. We distinguished three types of determinants: work-specific drivers, objective features of the employee as part of human capital (age, employment status, education level, etc.) and other subjective perceptions, feelings and attitudes (personality type, general life satisfaction) of the employee. Majority of people spend significant part of their life at work so it is crucial to determine those drivers which make employees happier, more satisfied – and hopefully – more productive. The first task was to find the key work-specific and personal features that affect employee wellbeing. The second issue was to test the assumption that job-satisfaction is positively correlated with the productivity on individual level. We tested our hypothesis on EU-SILC micro dataset together with its special module on wellbeing for 2013. We found that job satisfaction had a direct positive influence on individual productivity. We made some conclusions and emphasized the role of the employers and the government.

Key words: *subjective wellbeing, job satisfaction, workplace performance*

1. INTRODUCTION

Thinking of measuring a country's status with other metrics than GDP has been getting more and more popular since the last decade. In 2009 a study on alternative measurement of economic performance and social progress was published by a commission led by the economists Joseph Stiglitz, Amartya Sen and Jean-Paul Fitoussi (Stiglitz et al. (2009)). The aim of the "Beyond GDP" initiative was to develop indicators that are as clear as GDP, but more inclusive in economic, environmental and social aspects of progress. In 2011 the "better life initiative" (OECD (2011)) was implemented by OECD. This framework is built around three distinct domains: material conditions, quality of life and sustainability. Over the past quarter-century UNDP has also yearly published their human development index. The 2016 Human Development Report (UNDP (2016)) pays special attention to the issue how human development can be ensured for everyone. United Nations also endorsed 17 Sustainable Development Goals that the world should achieve by 2030. Several national subjective wellbeing measures have been elaborated, too. So regarding general wellbeing measures we have some well-determined indicators and methodology that can be widely used for international comparison. The picture is not so straightforward in case of measuring so called work-related or employee wellbeing notwithstanding that work-specific wellbeing issues can prove to be crucial for promoting long term economic performance.

The remainder of the paper proceeds as follows. Section 2 discusses the concept of work related wellbeing and reviews the evidence on the main drivers of job satisfaction and the links to economic performance at the level of an individual worker. Section 3 outlines the nature of our data and the applied empirical strategy. Section 4 presents the results of our empirical analysis, before Section 5 concludes.

2. CONCEPTS AND EXISTING EVIDENCE

Increasing general and work-related wellbeing level is getting viewed as an important target variable of public policy in the developed world (see Layard (2011) and Stiglitz (2009)). There is also a lot of empirical evidence that enhanced general wellbeing has a positive effect on individuals' health, creativity, engagement, therefore it can increase human capital potential. Based on an experimental

research even a causal direct link was found between human wellbeing and human performance (see Oswald (2015)). So there are reasons to think that happiness makes people more productive. But what makes employees be happy or satisfied at the workplace?

This paper focuses on the main drivers of work-related wellbeing or job satisfaction of employees and its potential impact on individual productivity.

Job satisfaction has been defined in several different ways. In the sphere of industrial and organizational psychology firstly Edwin A. Locke examined the nature and causes of job satisfaction (see Locke (1976)). His theory stated that job satisfaction is determined by a discrepancy between someone's expectation about an ideal job and the occupied job itself. Job satisfaction can be also seen as a complex emotional feeling someone has about his or her job (see Hulin (2013). By a more recent definition (see Kumari (2014)) job satisfaction includes all the issues which affect quality of an individual's working life. Therefore research for the most important influencing factors became widespread. Individual and environmental factors were differentiated. Among individual factors mood, emotions, genetics and personality proved to be related to job satisfaction (see Fisher (2000) Pugliesi (1999), Arvey (1989), Judge (2002)). Regarding environmental or institutional factors the role of communication, mainly the role of superior-subordinate communication and employee recognition seemed the main driver of job satisfaction (see Patterson et al. (2004)).

Recently the mass appearance of the millennial generation (born between 1980 and 2000) in the labour market arise new challenges. They are said to be extremely different from the previous generation and they will form 50% of the global labour supply by 2020. Regarding the PricewaterhouseCoopers' large (40000 responses) global generational "NextGen" study (see Finn et al. (2013)) Millennials' affinity with the digital world is different; they put much more emphasis on their personal needs than on those of the firm; they expect rapid carrier progression and constant feedback. Millennials are also looking for a good work/life balance as a top priority; they prefer flexible work culture, teamwork but digital communication. It also seems that Corporate Social Responsibility (CSR) is getting more and more important: millennials are attracted to those employers whose values matched their own as a consumer. Increased transparency and global mobility and personal development opportunities can prove to be also crucial factors for attracting talented, innovative, highly educated millennials.

Measuring quality of life at the workplace is a very complicated issue. The theories and scales are appeared to be inconsistently defined, and main drivers are seemed to be frequently changing, as well. The empirical studies usually follow survey based multidimensional approach. Simon Easton and Darren Van Laar at the University of Portsmouth elaborated a work-related quality of life (WRQoL) scale that aims to capture the essence of an employee's work experience (see Easton et al. (2012)), where general wellbeing, home-work interface, job satisfaction, control, working conditions and stress factors are the main dimensions.

From economic policy point of view the most important issue whether or not significant relationship between general job satisfaction and individual work performance can be proved empirically. Based on an experimental research at the University of Warwick (see Oswald et al. (2015) experts found that there is a casual link between human wellbeing and human performance, i.e. higher level of happiness is associated with higher productivity. In recent years the high performance work practices (HPWPs) have become recognized as one of the most important drivers of employee productivity (see Van De Voorde (2015) et al.), but others (for instance Ashkanasy et al. (2016)) argue that too much management control can rise the stress level and can deteriorate the employee wellbeing. Bryson et al. (2015) empirically investigated the relationship between employees' subjective wellbeing and workplace performance in Britain. A significant relationship between the level of job satisfaction and workplace performance has been found. These findings suggest that it is definitely worthwhile for employers to raise job satisfaction among their employees, and raising aggregate job satisfaction could improve levels of productivity and growth on macro level, as well.

This paper focuses on the main determinant of job satisfaction in Hungary and its potential impact on individual performance at the workplace. Firm-level and macro level productivity impact assessment are for further research.

3. DATA AND METHODOLOGY

In our analysis the EU-Statistics on Income and Living Conditions (EU-SILC) was used. It contains comparable multidimensional micro-data on income, poverty, social exclusion, housing, labour market, education and health. EU-SILC statistics cover objective and subjective aspects for both households and individuals. We used the cross-sectional dataset for 2013 which contains about 130,000 households and 270,000 persons in the European Union while more than 20,000 persons are interviewed in Hungary.

Ad-hoc modules are also developed in EU-SILC each year with supplementary variables highlighting unexplored aspects of social inclusion. In 2013 an ad-hoc module on subjective wellbeing was elaborated. Subjective wellbeing encompasses three sub-dimensions: life satisfaction, the presence of positive feelings (frequency of happiness and other positive emotions, trust in people, legal and political systems) and the feeling that one's life has a meaning. Satisfaction with particular life domains (financial situation, housing, job, commuting time, living environment, green and recreational areas, time use and personal relationships) also represent a crucial part of the general wellbeing.

Our first research question was about the determinants of the employee wellbeing. For answering this question we used the 'Job Satisfaction' variable which seemed to be a good proxy of employee wellbeing, and it was a part of the 2013 ad-hoc module. So we made some descriptive analysis to explore the possible explaining variables for the job satisfaction.

Secondly we wanted to determine the influence of the job satisfaction on the (individual) labour productivity. The problem is that there are a lot of factors which are correlated with both the job satisfaction and the labour productivity; so it would cause a huge bias if we would just simply make a regression between them. To eliminate this bias we have chosen the Oaxaca-Blinder decomposition. The original version of the method was published by Oaxaca (1973), and after several adaptations Autor (2015) applied it for analysing the gender gap. The simplified version of the method as follows. We define two groups on the grounds of the explaining variable which is in our focus. In our case it is the job satisfaction, and the two groups are the very satisfied (A) and the not very satisfied (B) employees. Then we estimate regressions for both groups using the above mentioned factors as explaining variables and productivity as endogenous variable:

$Y_A = \beta_A X_A + \varepsilon_A$ and

$Y_B = \beta_B X_B + \varepsilon_B$, where X is set of the explaining variables and β is the vector of the coefficients.

Because $E(\varepsilon_A) = 0$ and $E(\varepsilon_B) = 0$,

$E(Y_A) = \beta_A * E(X_A)$ and $E(Y_B) = \beta_B * E(X_B)$.

From this – using some equivalent manipulation – we obtain the decomposition form:

$$E(Y_A) - E(Y_B) = \beta_A * \big(E(X_A) - E(X_B)\big) + E(X_B) * (\beta_A - \beta_B) \qquad (1)$$

The left side of the equation represents the total difference between the group means. The first part of the right side $\big(\beta_A * \big(E(X_A) - E(X_B)\big)\big)$ embodies the difference which can be explained by exogenous variables of the regressions. The second part is the "rest", which cannot be explained by the regression. It means that this part can be explained only by the group effect. The ratio of this "real group effect" will be very important for us: when it is considerable, it means that the job satisfaction influences significantly the labour productivity.

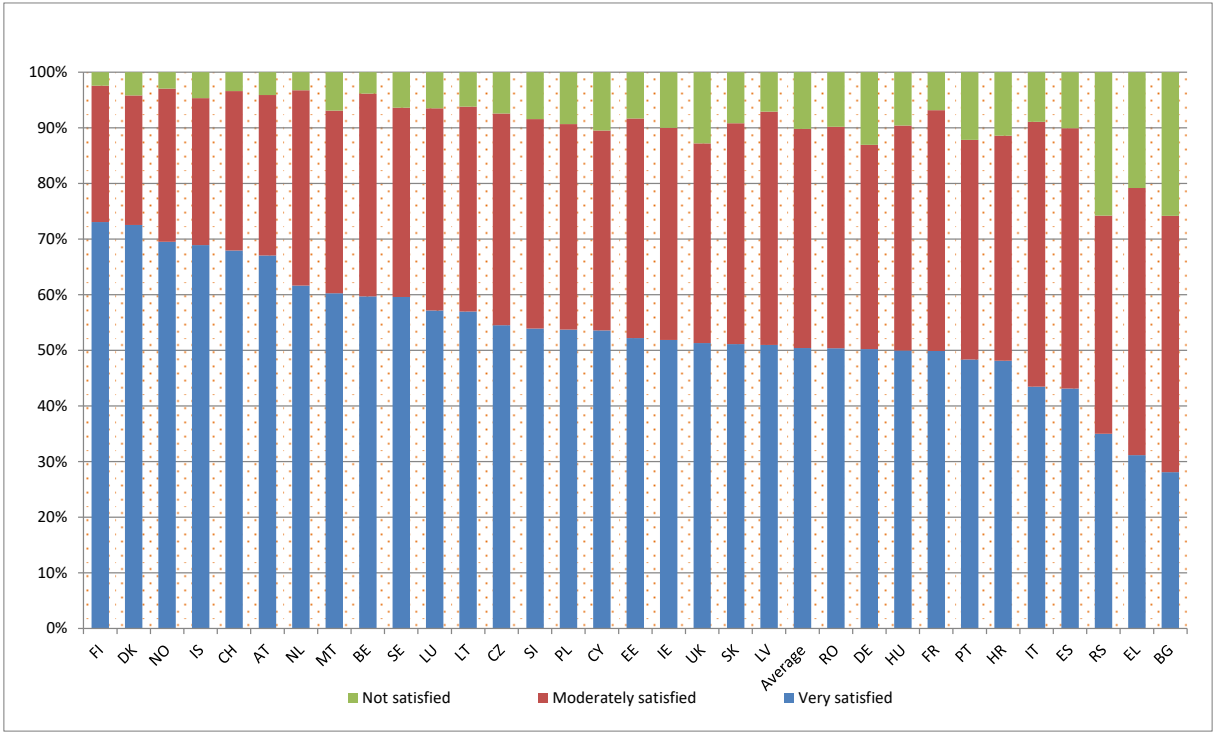
4. RESULTS

The results from the analysis will be presented in two parts. The first set of the results contains the descriptive statistics, concentrating on the strength of the relationship of two given variables. These results contain the measure of the association, the p-values of the adequate test and the related figures or tables. The second part is based on the regression analysis, exploring the direct connection between the job satisfaction and the productivity.

4.1. Results of descriptive analysis

Firstly we had to clarify whether there is any relationship between the job satisfaction and the country of the employee. For this analysis we used 3-outcome version of the job satisfaction. As you can see in Figure 1, the connection is considerable. The most satisfied workers live in Northern Europe (Finland, Denmark, Norway, Iceland), and the least contended persons are from Bulgaria, Greece and Serbia. The results are absolutely not surprising, it seems to be evident that the job satisfaction is correlated by the overall economic conditions and especially by the improvement of the economy. But we also realized that the relationship is not really strong, the Cramer's V measure is only 0.1797, which means that the connection is weak between the job satisfaction and the country of the employee. According to the chi-square test the relationship is significant, the p-value is less than 0.0001.

Figure 1. The distribution of job satisfaction by country



Source: Own calculation based on Eurostat EU-SILC database

The following results are related on Hungary. Table 1 shows the differences in the distribution of job satisfaction according to marital status. First of all we have state that the workplace satisfaction does not alter too sharp among the marital categories. This impression can be confirmed by the Cramer's V measure which is only 0.028. Even the relationship between the job satisfaction and the marital status is very weak (but significant), we can see that the married workers are the most delighted ones, while persons who live separately are the least satisfied employees.

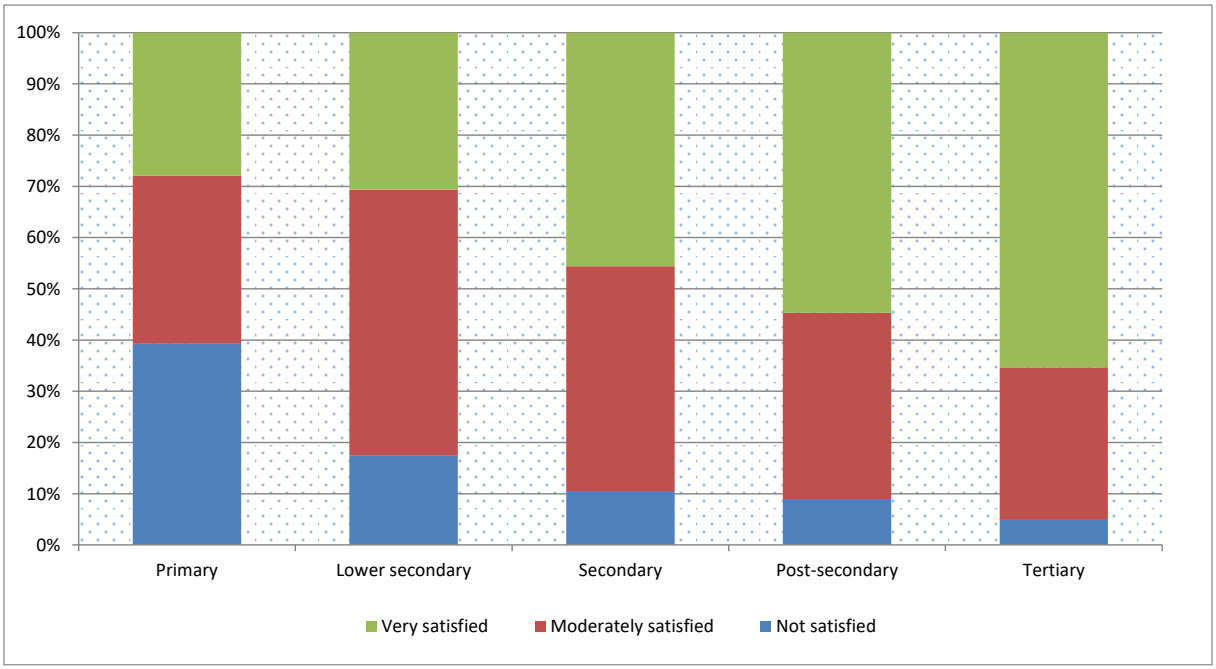
Table 1. The distribution of job satisfaction by marital status

	Never married	Married	Separated	Widowed	Divorced	Total
Not satisfied	9.7	8.3	18.4	17.7	12.6	9.6
Moderately satisfied	43.4	38.9	41.3	36.4	42.5	40.4
Very satisfied	46.9	52.8	40.3	45.9	44.8	50.0
Total	100	100	100	100	100	100

Source: Own calculation based on Eurostat EU-SILC database

The next figure is about relationship between the job satisfaction and the education level in Hungary. For specifying the education level we use the Eurostat definition which is the highest ISCED level. Figure 2 clearly shows that the variables are interrelated; the employees with the higher education level are the more satisfied with their jobs. The connection between the variables is not too strong (Cramer's V = 0.0844), but it is definitely significant.

Figure 2. The distribution of job satisfaction by education level



Source: Own calculation based on Eurostat EU-SILC database

Table 2 shows the differences in the distribution of job satisfaction according to employment status. One can see that the Hungarian employees prefer to be self-employed, especially if they are employers at the same time. Family workers form the least delighted set of employees. The Cramer's V measure is only 0.0585, so the relationship is not really strong between the variables. But the connection is significant; the p-value of the chi-square test is less than 0.0001.

Table 2. The distribution of job satisfaction by status in employment

	Self-employed with employees	Self-employed without employees	Employee	Family worker	Total
Not satisfied	9.3	10.1	9.5	13.1	9.6
Moderately satisfied	26.1	38.3	41.4	49.6	40.5
Very satisfied	64.6	51.6	49.0	37.3	50.0
Total	100	100	100	100	100

Source: Own calculation based on Eurostat EU-SILC database

The next table is about association between the job satisfaction and the managerial position in Hungary. The 'managerial position' variable has only two outcomes: supervisory or non-supervisory. Table 3 shows that the employees are more satisfied when they are in supervisory position. The relationship between the variables is not strong (Cramer's V = 0.092), but it is significant.

Table 3. The distribution of job satisfaction by managerial position

	Supervisory	Non-supervisory	Total
Not satisfied	5.4	10.1	9.5
Moderately satisfied	27.5	43.6	41.5
Very satisfied	67.2	46.3	49.0
Total	100	100	100

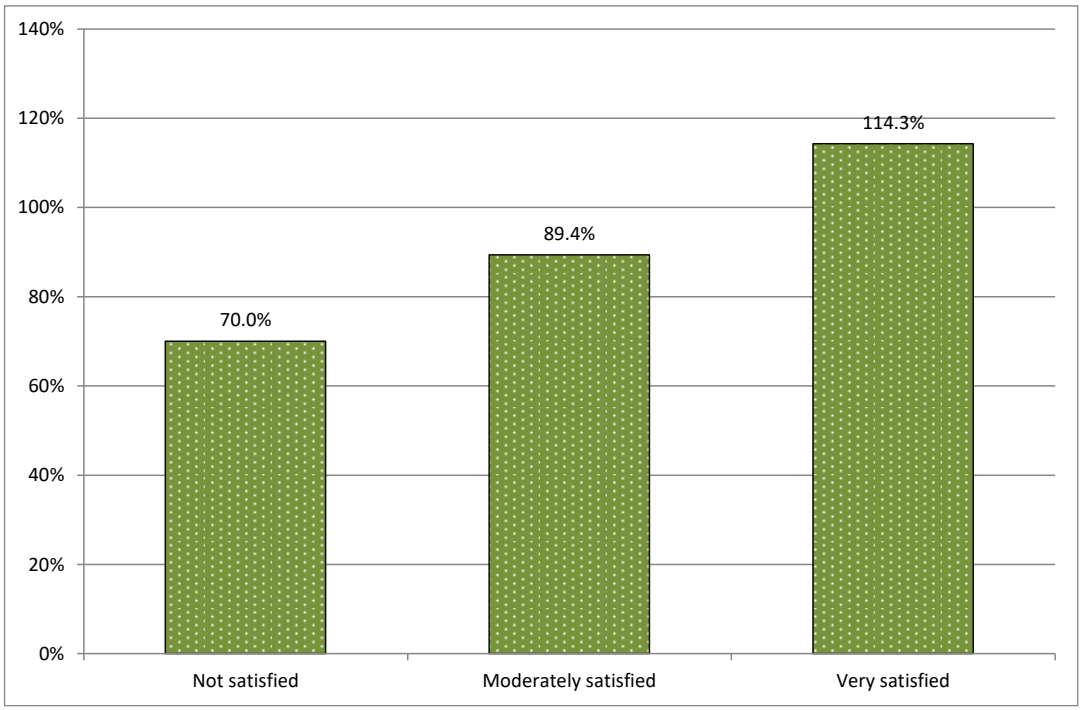
Source: Own calculation based on Eurostat EU-SILC database

The previous five figures/tables showed the association between two qualitative variables. The next figure presents the relationship between the job satisfaction and the income of the employee. For this analysis we use the 3-outcome version of the job satisfaction as before, so this variable is a qualitative one. On the other hand the income is a quantitative variable, so we analyse a mixed relationship in this case. In such situations the averages of the quantitative variable by the categories of the qualitative variable can inform us about the strength of the relationship. If the averages are equal, there is no connection between the variables. If the averages are far from each other, the relationship is strong.

As you can see in Figure 3, the averages are quite different in Hungary, so the connection is considerable. Instead of the total income we used the 'cash or near cash income' category, because it seemed to be more stable and homogenous than the whole income. Normally the qualitative variable explains the quantitative one, but in our case the interpretation is easier if we change the role of the variables. So we can see that the employees with higher income are more satisfied. This is still not really surprising, but the weakness of the relationship was a bit dumfounding. The Wilks' Lambda1 is 0.9713, which means that the explaining power of the qualitative variable is only 2.87%. According to the ANOVA F test the relationship is significant; the p-value is less than 0.0001.

[1] The Wilks' Lambda represents the non-explained ratio of the total variance of the quantitative variable.

Figure 3. The average cash income by categories of job satisfaction (in percent of the total average cash income)



Source: Own calculation based on Eurostat EU-SILC database

The next table shows the connection between the job satisfaction and the occupation of the employee. For this analysis we used the original 11-outcome version of the job satisfaction[2], so this variable could be handled as a quantitative one. The occupation category is a qualitative variable, so the relationship is mixed again. In the EU-SILC database occupation categories were defined according to the ISCO-08 codes (2 digits). It means that the original variable had about 50 categories which are too many to overview conveniently. So we transformed the variable using the major groups which defined 10 categories.

As you can see in Table 4, the averages vary between 6.0 and 8.2, and the total average is 7.1. The most satisfied Hungarian employees work for different armed forces, and the least delighted ones labour at elementary occupations. The Wilks' Lambda is 0.9296, which means that the occupation category explains 7.04% of the variability of the job satisfaction. According to the ANOVA F test the relationship is significant; the p-value is less than 0.0001.

[2] From 0 (Not at all satisfied) to 10 (Completely satisfied)

Table 4. The average job satisfaction by categories of occupation

Occupation Category	Average Job Statisfaction
Armed Forces Occupations	8.2
Managers	7.5
Professionals	7.9
Technicians and Assiciate Professionals	7.4
Clerical Support Workers	7.3
Services and Sales Workers	6.9
Skilled Agricultural, Forestry and Fishery Workers	6.7
Craft and Related Trades Workers	6.8
Plant and Machine Operators and Assemblers	6.8
Elementary Occupations	6.0
Total	**7.1**

Source: Own calculation based on Eurostat EU-SILC database

4.2. Results of regression analysis

We have quantified the components of the Oaxaca-Blinder decomposition as described in chapter 3. The EU-SILC statistics does not contain direct information about the individual productivity, so we had to create the endogenous variable of the equation. We used the hourly wage as a proxy, computed from the cash and near-cash income and the number of hours worked per week. The group framing variable was the 2-outcome version of job satisfaction: very satisfied (from 8 to 10) vs not very satisfied (from 0 to 7). We used the following explaining variables for the regressions[3]:

- Education level: qualitative variable, 5 outcomes
- Age: quantitative variable
- Gender: qualitative variable, 2 outcomes
- General health: qualitative variable, 5 outcomes
- Overall life satisfaction: quantitative variable
- Satisfaction with personal relationships: quantitative variable
- Feeling downhearted or depressed: quantitative variable
- Status in employment: qualitative variable, 4 outcomes
- Number of persons working at the local unit: quantitative variable
- Occupation category: qualitative variable, 10 outcomes
- Type of economic activity (branch): qualitative variable, 13 outcomes
- Satisfaction with commuting time: quantitative variable.

The details of the outcome and the expected values of the explaining variables by job satisfaction group can be found in the annex. Table 5 shows the results of the decomposition.

[3] In case of qualitative variable we created dummies as usual; the reference categories are given in the annex.

Table 5. The decomposition of difference in productivity by satisfaction and other characteristics of employees (1000 HUF/hour or %)

	HUF	%
Impact of job satisfaction	0.267	36.2%
Impact of other characteristics	0.470	63.8%
Difference in average productivity	0.737	100%

Source: Own calculation based on Eurostat EU-SILC database

We can see that very satisfied employees earn 737 HUF/hour more than the others in average. We regard this difference as the total advantage of very satisfied workers in individual productivity. About 64% of this difference is explained by the personal and other characteristics excluding job satisfaction. It means that satisfied employees have more favourable features regarding the individual productivity, independently from their workplace happiness. The other 36% of the difference is purely caused by their higher job satisfaction level.

5. CONCLUSIONS

This paper focused on finding the main drivers of job satisfaction and also investigating the relationships between the job satisfaction and productivity on individual level in Hungary. For the analysis we used the EU-SILC cross-sectional dataset with the ad-hoc module for wellbeing for 2013. Based on the empirical analysis we found that there were important objective (education level, gender, age) and subjective (general wellbeing perceptions and attitudes, depression, satisfaction with personal life) determinants of job satisfaction. The analysis also showed that work-specific issues as industry, occupation category, firm size, employment status were also very important factors of job satisfaction.

The cross-sectional analysis sought also to investigate the relationship between job satisfaction and productivity. We applied the Oaxaca-Blinder decomposition method to separate the effect of job satisfaction from effects other personal and work-specific characteristics. We found a significant relationship between job satisfaction and individual productivity. These findings are mainly in line with the reviewed literature, especially with those reported by Bryson et al. (2015).

Based on these results we firmly believe that taking better account of satisfaction of employees at the workplace is good for the employers, as well. It also suggests that making steps towards raising job satisfaction level can be also a productivity gain on firm and country-level.

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Annex: Regression parameters and expected values of the exogenous variables

	jobsat=0	**jobsat=1**		**jobsat=0**	**jobsat=1**
prod_ind	Coef.	Coef.	Reference category	E(x)	E(x)
Education level (pe040)			primary		
lower secondary	-1.12416	-0.1194		0.1305	0.0577
secondary	-0.69771	0.3282		0.6331	0.5312
post-secondary	-0.57449	0.7969		0.0407	0.0492
tertiary	-0.05471	1.7914		0.1906	0.3599
Age	0.016324	0.0374		44.30292	44.20168
Gender (pb150)			Male		
Female	-0.38414	-0.6326		0.5064	0.527
General health (ph010)			very good		
good	0.080399	-0.2804		0.5557	0.5807
fair	0.057003	-0.6114		0.2640	0.1849
bad	0.031581	-1.1964		0.0465	0.0206
very bad	4.566892	0.0108		0.0052	0.0014
Overall life satisfaction (pw010)	0.021529	0.0232		5.855137	7.542806
Satisfaction with personal relationships (pw160)	-0.01134	-0.0144		7.322092	8.688403
Feeling downhearted or depressed (pw080)	-0.05306	0.1220		3.603459	4.074089
Status in employment (pl040)			self-employed with employees		
self-employed without employees	-0.50185	0.2713		0.073	0.0779
employee	1.785422	3.0513		0.8805	0.8492
family worker	0.223613	0.5774		0.0097	0.0058
Number of persons working at the local unit (pl130)	0.059534	0.0870		10.02009	9.817801
occup_cat			Armed Force		
Managers	-1.43167	1.1744		0.026	0.0512
Professionals	-0.83181	-0.2849		0.1088	0.2354
Technicians and Assiciate Professionals	-1.44403	-0.5640		0.1246	0.1683
Clerical Support Workers	-1.91987	-0.9596		0.0771	0.0911
Services and Sales Workers	-2.13749	-0.6820		0.1576	0.1255
Agricultural, Forestry and Fishery Workers	-2.59652	-0.9674		0.0444	0.0316
Craft and Related Trades Workers	-2.31605	-1.0069		0.1617	0.1279
Plant and Machine Operators and Assemblers	-2.43773	-1.2266		0.146	0.1028
Elementary Occupations	-2.83687	-1.4071		0.1516	0.0563
branch			Agriculture		
Industry	0.307874	0.2648		0.2478	0.2089
Construction	0.493976	0.2101		0.0699	0.0511
Trade	0.126977	0.0896		0.1368	0.1165
Transportation	0.568091	0.5947		0.0682	0.0636
Accomodation and Food Srevices	0.014351	-0.0190		0.0363	0.023
Information and Communication	0.670278	0.1855		0.0131	0.0313
Finance and Insurance	1.01998	1.1752		0.0234	0.0313
Non-material Services	-0.08742	0.3474		0.0768	0.0785
Public Administration	-0.12847	0.2474		0.0981	0.1045
Education	-0.16715	-0.8203		0.0684	0.1241
Health	-0.17696	-0.2369		0.062	0.0793
Other Services	-0.37429	-0.1990		0.0351	0.0338
Satisfaction with commuting time (pw110)	-0.0135	0.0063		7.03202	8.389131
_cons	2.632235	-2.0569		1	1