INVESTMENT IN HUMAN CAPITAL – A CASE STUDY ON SOME MAIN PATTERNS OF THE SOCIAL DIMENSION OF EU DEVELOPMENT POLICY

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Abstract

It is regarded obvious that the EU-accession of Hungary in 2004. Seemed to be a remarkable opportunity and a great challenge: the modified development policy and the related funds becoming available made it possible for the governments to reach different kind of objectives. Some of these objectives concerned – among others – directly the human resources of the country. We investigate empirically – on different territorial (micro-regions and counties) levels – the composition of the development funds allocated in the light of social-demographical indicators. In the course of data analysis we explore the impact of different socio-demographical factors on the capacity to attract development funds so employ regression estimation models to estimate the effects, furthermore different indicators of concentration to demonstrate the different – unequal – patterns of development fund absorption. According to the results both the development projects and funds generally tend to be allocated with higher possibility and higher amount to territories with more developed human infrastructure, however there can be explored tendencies that narrow the development gap: on micro-regional level the projects and funds officially related to the objective of human development are less depended on the human infrastructure that is also confirmed by the values of the Robin Hood Indexes.

Key words: human development, social inequalities, EU development policy

JEL Code: J24, J18, R58

Introduction

In this short report of our research planned to explore the social factors determining the possibilities of social development we shed some light on the connection between social inequalities and development policy. We introduce some empirical results of our preliminary analysis about the capacity to spend or absorb development funds – especially aimed at human or social objectives – to territories with less developed population. In this stage of our

research we used secondary data analysis as research method and as it proved to be impossible to gain official data on project level it was necessary to use aggregated data. That is why we carried out the analysis on territorial level of Hungary. It may not be a great problem as in this case (1) we can consider the different territorial levels to be the aggregations of social inequalities and (2) we can carry out the analysis on a dimension regarded as important by the Hungarian development policy itself.

In this context our main research question is whether the socially underdeveloped territories have an advantageous position in the European Union projects- and funds absorption.

1   Outlining the theoretical frame

To embed the problem theoretically[1] we interpret the system of development policy as something that intends to help common goods to come into existence – or rather to prevent the situation of *common bad* to come into existence – when it employs *institutional devices* in order to enforce territorial equalization principle (Batterbury, 2006) in the central regulation of the resources' allocation (Martin, 2000). Our preliminary assumption is however that the state fails to succeed causing counterproductive effects. In this concept we build on previous studies which discuss and empirically unveil the reproduction of inequalities of (territorial) development policy (Bradley, 2006; Crescenzi, 2009; Esposti–Buselotti, 2008; Martin–Tyler, 2006). We argue that institutional changes of development policy (Davey, 2003) in Hungary caused by joining the EU can be considered a strong institutional rearrangement (Kovách–Kučerová, 2006) but the main characteristics and patterns of *competing for development resources* have not changed considerably. A distinctive feature of this research might be that the problem is examined from an *institutionalized* point of view, i.e. we study whether the institutional regulations and classifications *generated* and *applied by the regional policy itself* reach their aim.

2   Data and methods

To carry out the analysis we have built complex databases aggregated on county and/or micro-regional level. The main source of our databases is the statistical information webpage www.regionaldata.org and into the tables collected at this system we integrated some additional information (e.g. information on micro-regional classification from official governmental decree, development funds absorption statistics from the webpage of the

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[1] The main aim of this paper is to introduce our main empirical findings, so we only shortly outline the theoretical frame. For more detailed exposition see: Balogh (2012).

former National Development Agency)[2].

On the one hand we apply simple methods to investigate the territorial distribution of development projects and funds in the light of social development. In this case we edited graphs to illustrate and computed inequality measures (Hoover (Robin Hood) Index) to quantify the differences.

On the other hand we use multi-variable statistical tests reveal some possible explaining factors of social development capacity. In the course of this data analysis we employ linear regression models of impact analysis (Moksony, 2005) in order to reach higher level of internal validity (Moksony, 1985), i. e. to control the estimation for alternative and potentially distorting explaining factors and to measure the net effects (Moksony, 2006).

3   Data analysis

3.1   County-level tendencies

The distribution of development projects among counties with different level of education is rather unequal (see Fig. 1): in the case of counties characterized by population of lower education level (less than 9,09-9,10 classes attained on average) seems to be a shortage in the share of projects, and in the counties with more highly-skilled inhabitants the cumulative percentage of development projects is higher.

Not only the projects, but the funds also seems to be unequally allocated: the development funds are concentrated in the counties with more educated population. In the case of funds the correlation between the relative frequency of the variable and the average of

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[2] The variables of the complax database are as follows:

Name of variable	Territorial level	Source
Percentage of EU development projects (%)	Counties	www.regionaldata.org
Percentage of EU development funds (%)	Counties	www.regionaldata.org
Education level (classes attained)	Counties	www.regionaldata.org
Micro-regional HDI	Micro-regions	Farkas (2012)
Percentage of EU development projects (%)	Micro-regions	Former www.nfu.hu
Percentage of EU development funds (%)	Micro-regions	Former www.nfu.hu
Percentage of human EU development projects (%)	Micro-regions	Former www.nfu.hu
Percentage of human EU development funds (%)	Micro-regions	Former www.nfu.hu
Micro-regional status (dummy)	Micro-regions	Recoded according to the concerning governmental decrees
Number of registered unemployed (p.)	Micro-regions	www.regionaldata.org
Number of registered enteprises (p.)	Micro-regions	www.regionaldata.org
Number of taxpayers (p.)	Micro-regions	www.regionaldata.org
Sum of EU development funds (HUF)	Micro-regions	Former www.nfu.hu
Sum of human EU development funds (HUF)	Micro-regions	Former www.nfu.hu

classes attained by the population above 7 years old is higher (r=0,77) compared to the share of projects (r=0,65). That is on county level there seems to be an advantage in the case of territorial units with more skilled population: if the education level is higher, there can be measured a higher level of project application activity and a higher level of absorbed development funds.

**Fig. 1: Distribution of development projects and funds (education level)**
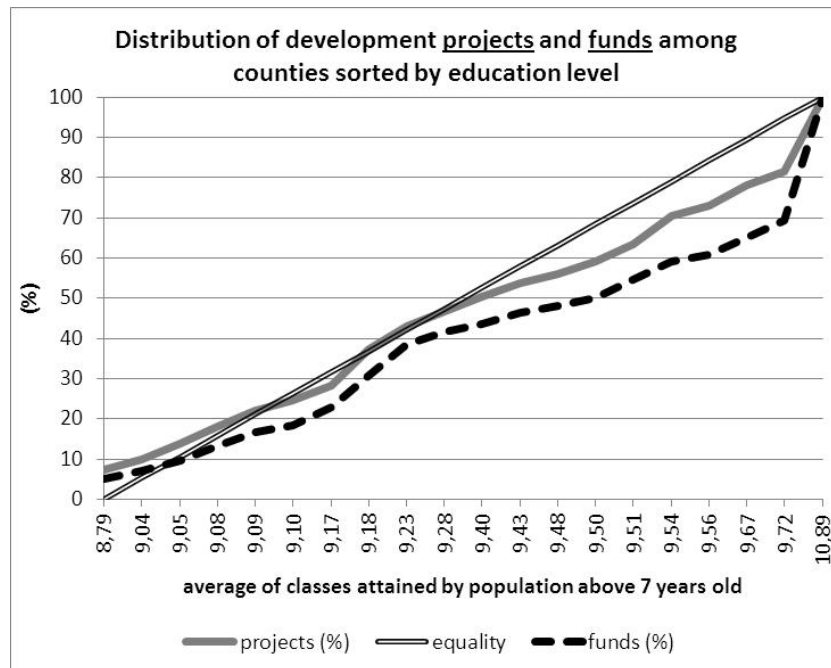
Source: Own calculation and edition on county-level data

As an additional information it can be noted that the concentration of the funds among counties is low: the value of the normalized Hirchman-Herfindahl Index (HHI*=0,079) is below 0,1 i.e. the distribution is rather fragmented (Szakálné Kanó, 2011. 85. p.). Next we step down to micro-regional level as that dataset enables us to separate the projects and funds directly intended to help carry out objective connected to human development.

3.2   Micro-regional level analysis

During the analysis of micro-regional level data the comparison of human development objective and other development objectives is highlighted.

There can be measured a positive relation between the *number of projects* and HDI on micro-regional level: the higher the HDI – the more developed of the human infrastructure in the micro-region is – there can be registered more development projects – it is illustrated in Fig 2.: both curves show a higher amount of cumulative share of the number of projects in the case of the micro-regions with higher level of HDI.

**Fig. 2: Distribution of development projects (HDI)**
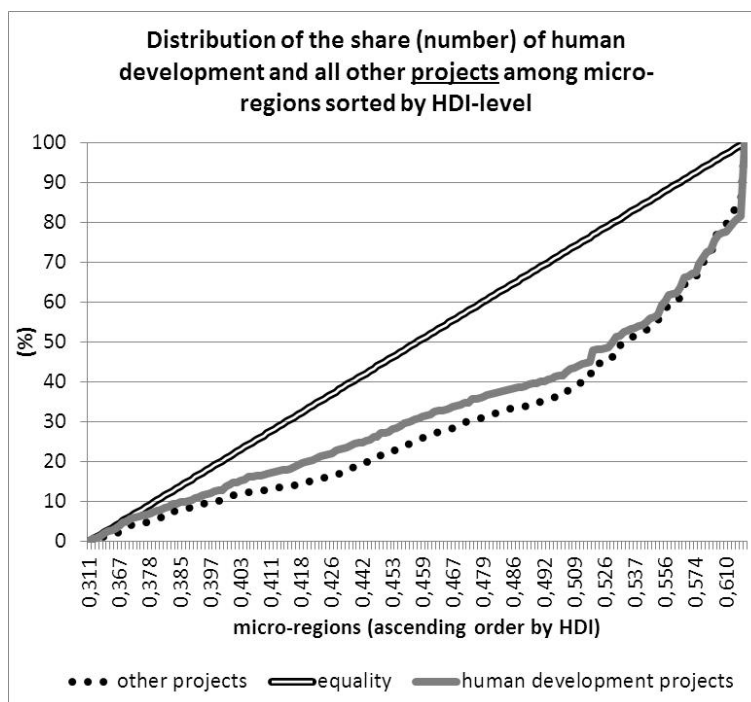
Source: Own calculation and edition on micro-regional data

In the case of the human development projects the difference seems to be smaller compared to all other projects: the correlation level between the HDI value of the micro-regions and the number of projects in the micro-regions is lower (r=0,33) than in the case of the other (not human development) projects (r=0,42). That is *the distribution of the human development projects is less depended on the level of the development of the human resources*. The difference between the two groups of projects is statistically significant (p<0,000).

The same pattern can be observed in the case of the allocated *development funds* (see Fig. 3.): in both groups of the grants allocated in human projects or other projects the higher the actual development level of the population in the micro-region, the higher share of development funds is. This connection is also stronger in the case of other (not human development) development funds (r=0,36) compared to the group of human development funds (r=0,26) which imply that the funds devoted to develop the social dimensions of the micro-regions are less depended on the human infrastructure itself. The illustration however also show that in the case of human development funds compared to the other group can be registered a smaller difference from equality *in the range of smaller values of HDI* (the curve runs closer to the equity line than the other curve), and above a certain level of HDI

(approximately 0,45-0,46) the pattern of inequality is changed: the cumulative deviation from the equality is higher in the case of human development funds.

Fig. 3: Distribution of development funds (HDI)
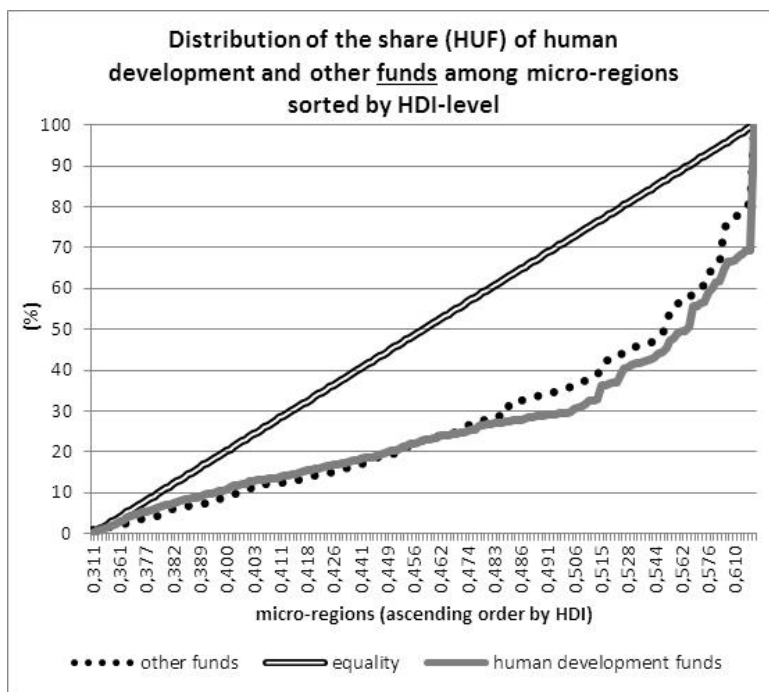
Source: Own calculation and edition on micro-regional data

So both the projects and funds of human and other development are depended on the human infrastructure on micro-regional level, but the *level of this dependence is lower in the case of human thematic group*.

Tab. 1: Hoover (Robin Hood) Indexes of development funds

Inequalities of allocated funds	Hoover (Robin Hood) Index of funds	Hoover (Robin Hood) Index of funds*
total	22,5	19,2
human development funds	26,0	22,1
other (not human) development funds	23,5	18,9

* the values of Budapest excluded

Source: Own calculation on micro-regional data

In order to quantify the extent of inequality we calculated from micro-regional level data the Hoover (Robin Hood) index of development funds in the light of the distribution of the population (see Tab. 1.). The overall value is 22,5%, i.e. nearly one-fourth of the development funds should be re-allocated among the micro-regions in order to fit the pattern

of population distribution. Investigating it separately in the two groups of development objectives, the value of Hoover (Robin Hood) index is higher in the case of human development (H(RH)I=26%)[3].

Considering the Hoover (Robin Hood) indexes of the development funds allocated in the *groups of developed and underdeveloped* micro-regions[4] it can be said that the distribution of both the total sum of development funds and the human development funds are more unequal in the group of developed micro-regions compared to the underdeveloped micro-regional group (see Tab. 2.): in the micro-regions in better position 23% of the overall development funds should be redistributed in order to fit the population structure, and in the disadvantageous micro-regions the concentration is smaller; only the 17% of the funds should be reallocated.

Tab. 2: Hoover (Robin Hood) Indexes in micro-region groups

Hoover (Robin Hood) Index (%)	Total sum of development funds	Total sum of <u>human</u> development funds
Developed micro-regions	23,35	26,57
Underdeveloped micro-regions	16,96	21,62

Source: Own calculation on micro-regional data

In the case of the funds aimed to reach objectives related to human development the inequalities are generally higher – in both groups of the micro-regions, but the tendency explored above appears as well: in the group of underdeveloped micro-regions a lower concentration can be measured; only ~22% of the funds should be redistributed.

However it may be also noted that the difference of the level of inequality between the developed and underdeveloped micro-regions is higher in the case of human development funds: the multiplier between overall funds and human development funds in the group of developed micro-regions is smaller (1,1) compared to the other group: in the case of the group of disadvantageous micro-regions the extent of inequality is 1,3-times higher for the human development funds.

In the further analysis we investigate *some possible* factors which may have some role on the possibility to successfully absorb development fund – with special attention on human development and social factors.

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[3] This pattern of difference can be also registered if the data is cleaned from and recalculated without the values of Budapest: the overall measure of inequality decreases, but the human development funds seem to be more unequal.

[4] Classification according to the actual governmental decree.

3.3 Social-demographical factors of human development fund allocation

Investigating by linear regression estimation (Adj. R^2=14,2%, F=6,710, p=0,000) the role of certain socio-demographic variables on the capacity to gain EU funds directly aimed to develop human infrastructure it can be concluded that (see Tab. 3.)[5] the number of taxpayers in the population and the frequency of the enterprises do not prove to have significant effect on the dependent variable. The share of human development funds is effected by the *total sum of funds allocated itself*, the *number of unemployed* in the micro-regions and the *HDI-level* of the population.

Tab. 3: Multivariate regression model results for share of human development funds

Model[a]	Unstandardized Coefficients		t	p
	B	Std. Error		
(Constant)	66,809	8,212	8,135	,000
Total sum of development funds (Millions HUF)	,000	,000	-3,331	,001
Number of unemployed (2009)	,003	,002	2,080	,039
Number of registered enterprises (2009)	,393	,319	1,231	,220
Number of taxpayers (2009)	,000	,000	1,919	,057
Micro-regional Human Development Index (2008)	-88,348	17,953	-4,921	,000

a. Dependent Variable: percentage of human development funds in all EU-funds allocated in the micro-region

Source: Own calculation on micro-regional data

According to these results the allocation of human development funds is more successful in micro-regions where the fund absorption capacity is generally higher (dominantly developed micro-regions), where the unemployment is bigger problem and the human development level is lower. The role of the two latter variables can be regarded as *advantageous* factors in the problem of social development possibilities.

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[5] The results of the individual regression models containing only the socio-demographic factors one by one show that (1) the number of unemployed population as explaining variable proves to be significant and positive factor (Adj. R^2=3,3%, p<0,05); (2) in the case of the registered enterprises the model is insufficient in estimating the dependent value of share of human development funds (Adj. R^2=1,1%, F=0,023, p=0,978) as the variables have not significant effect; (3) considering the role of the number of taxpayers as individual explaining variable similar results can be seen; the model is not significant (Adj. R^2=0,8%, F=1,693, p=0,189); (4) the human development index as explaining factor proves to be important (Adj. R^2=7,6%, F=8,118, p=0,000) and has a negative effect (b=-70,2; p<0,000).

Conclusion

According to the results of the exploratory analysis the answer(s) for the question whether the socially underdeveloped territories have an advantageous position in the European Union projects- and funds absorption prove to be rather controversial as summarized below:

1. Both on county-level and micro-regional level data the distribution of development projects and development funds proves to be unequal: the territorial units characterized by better position of their population (e.g. education, human development index) gain a greater cumulative share of projects and funds.

2. On micro-regional data differentiated by the thematic objective of human and other development projects and funds the difference was smaller in the case of the previous one: the projects and funds of human development are less depended on the human infrastructure on micro-regional level.

3. The Hoover (Robin Hood) indexes calculated for the overall, and separately for both the human and other development funds indicate a higher level of inequality of the funds.

4. Values of Hoover (Robin Hood) index also confirm the association that the human development funds are less unequal in the group of underdeveloped micro-regions compared to the advantageous micro-regions.

5. According to the results of the multi-variable estimation models (only) the general fund absorption capacity and the socio-demographic factors of the number of unemployed and the HDI influence the average extent (share) of human development fund absorption (direction of effects respectively: positive, positive, negative).

In the light of the results it seems necessary and important to carry on further research applying expanded data sources containing more indicators and explaining variables, preferably by multi-level comparisons of territorial units.

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