

Investigating the ‘Visible Hand’: Patterns of Economic Development Policy in Hungary

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In this paper we shortly introduce some results from our empirical research about the institutional regulation of development policy. Hungary has already been a member of the European Union for ten years, and in this period the possibilities and financial capacity of the actual governments and policy-makers to reach several – even different – desirable goals increased due to the accessibility of the EU development funds. In our research we investigate empirically the patterns; the success and results of the allocation mechanisms applied to distribute these funds and investments. During that examination we build on an institutionalized approach: we study whether the institutional regulations – horizontal principles – and classifications generated and applied by the development policy itself have an effect or reach their aim. A special attention is paid on the chance of comparability raised by the fact that since 2011 in parallel with the European Union funds the government started to promote, support and extend economic development by investing further financial resources.

Below we (1) shortly outline the theoretical frame mainly based on the assumptions of new economic sociology to interpret and to embed the research question, and primarily (2) demonstrate some results of our quantitative empirical work.

To examine the issue empirically we have built a complex database with several statistical data aggregated on county level.

In the course of the quantitative secondary data analysis we calculate different types of indexes (i.e. Hoover (Robin Hood) index) in order to explore, measure and compare the allocation patterns of economic investment policies.

According to the preliminary results to be presented more detailed below it can be generally concluded that the two different patterns of investment absorption can be empirically distinguished considering their socio-economical outcomes – which might be explained by the presence – or lack – of an administrative regulation system behind the allocation mechanisms of the development funds.

Outlining the theoretical frame

To embed the problem theoretically¹ we apply the frame of *new economic sociology*, which we consider appropriate for our investigation. Thus we interpret the system of development policy *primarily* as something that intends to help common goods to come into existence (Olson 1997) – or rather to prevent the situation of *common bad* (Hirschman 1995) to appear – when it employs *institutional devices* (Elster 1995, North 1990) in order to enforce different horizontal (e.g. territorial cohesion, equality of chances, environmental sustainability) principles (Batterbury 2006) in the central regulation (Stigler 1989) of the resources' allocation (Martin 2000). Our preliminary assumption is however that the state fails to succeed (Tullock 2005) causing counterproductive effects (Szántó 2006). In this concept we build on previous studies which discuss (Konrád–Szelényi 2000) and empirically unveil (Vági 1991, 1982) the reproduction of inequalities of 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 (Stead–Nadin 2011, Kengyel 2008) can be considered a strong institutional rearrangement (see Csité–Kovách 2002, Kovách–Kučerová 2006) but the main characteristics and patterns of *competing for development resources* (Vági 1982) have not changed considerably (Voszka 2006). 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 development policy itself* reach their aim.

Data and methods

To carry out the analysis we have built complex databases aggregated on county level. The main source of our databases is a statistical information webpage and into the tables collected at this system we integrated some additional information².

In the process of data analysis we employed Microsoft Excel software to (1) apply simple methods to investigate the territorial distribution of development funds and (2) explore by comparison the distributions in the light of certain economic and social development measure. In this case we edited graphs to illustrate and computed inequality measures (Hoover (Robin Hood) index) to quantify the differences furthermore computed correlation coefficients in order to express the degree of connection between the variables. As we do not apply sampling methods, that is we consider the data of the analysis to cover the whole population – Hungary described by county-level aggregation of statistical indicators –, so it is not needed to generalize the results on a wider

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

² The detailed description of the variables is included in the Appendix.

sphere than the observation units themselves. In accordance we do not test the significance either.

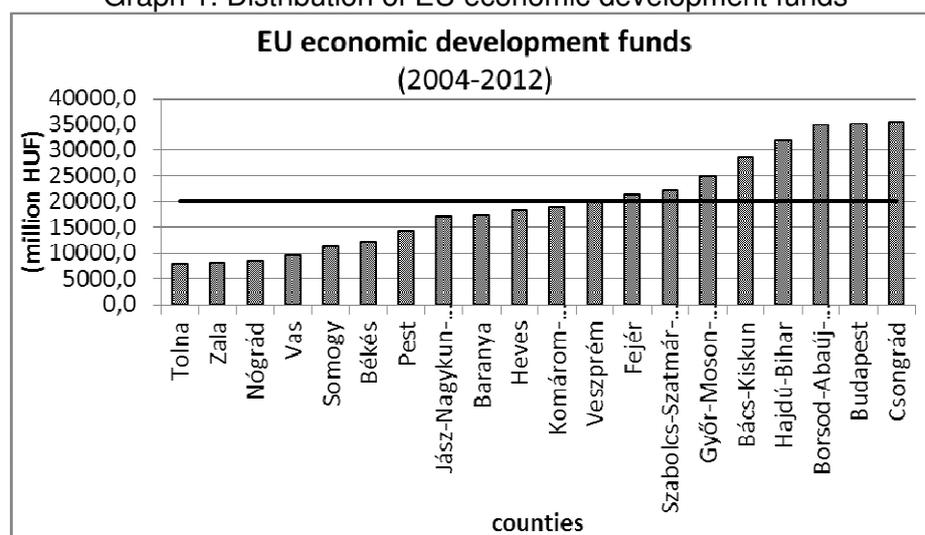
Results of data analysis

Absorption patterns of EU and domestic economic development funds

In order to explore the allocation pattern of the development funds in the frame of the European Union grant system we collected and summarized the overall funds aimed directly to support economic development of both the two official planning periods between 2004-2006 and 2007-2013. Accordingly it implies that in the analysis below we investigate on county level³ the statistics of ECOP (Economic Competitiveness Operational Programme; in Hungarian: GVOP: Gazdasági Versenyképesség Operatív Program) and EDOP (Economic Development Operational Programme; in Hungarian: GOP: Gazdaságfejlesztési Operatív Program) funds.

There can be observed certain differences in the *EU economic development funds* granted in the counties of Hungary in the examined period: the mean value of these funds is 19952,4 million HUF, but more than the half of the counties are below this value (see Graph 1.). The highest value (35551,7 million HUF) can be measured in Csongrád county and the lowest one (7974,6 million HUF) in Tolna county. The *range ratio* – interpreted as a simple measure of polarization (TI 2005: 4) – of these data is 4,46 that is, the county in the first place has nearly four-and-a-half times higher value compared to the one in the last place.

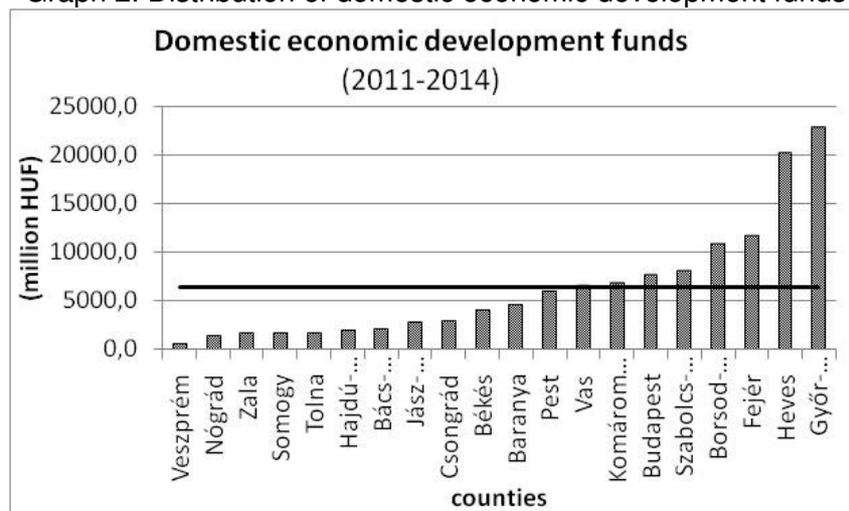
Graph 1. Distribution of EU economic development funds



³ In this analysis when county-level is mentioned, it also includes Budapest as a separate territorial unit, not as a part of Pest county.

The main statistics of the *domestic* funds aimed to strengthen economic development of Hungary also indicate great differences (see Graph 2.) in the case of this financial investments also twelve counties are below the mean value (6399,4 million HUF). The best position is acquired by Győr-Moson-Sopron county, at the end of this sequence Veszprém county can be found, the difference between the first and last territorial units, i. e. the value of range ratio is 31,38 (!).

Graph 2. Distribution of domestic economic development funds



Comparing these main statistical measures of the two separate economic development policy outcomes (see Table 1.) it can be said that in the frame of the originally longer period of EU development programs – evidently – a (approximately three times) higher amount of funds were allocated than in the four years of the domestic economic development process, furthermore in the former case both the mean and standard deviation values prove to be higher. The same tendencies can be seen in the case of the (absolute) values of maximum and minimum. However it can be also recognized that if we consider the relative measures of the two databases remarkable differences emerge but in an opposite direction: the *relative standard deviation* value – expressing the standard deviation in the unit of the mean (TI 2005: 6) – is higher in the case of the domestic economic development: 95% of the actual mean and only ~47% of the actual mean in the case of the EU economic funds. The *range ratio* proves to be also (much) higher if calculated on the county-level data of the two different policies: while in the case of the EU funds the difference between the highest and the lowest values is only ~4,5; in the case of the domestic investments the value of the county with the best position (maximum value) is ~31-times higher than the county in the worst position.

Table 1. Main statistics of the EU, and the domestic economic development funds

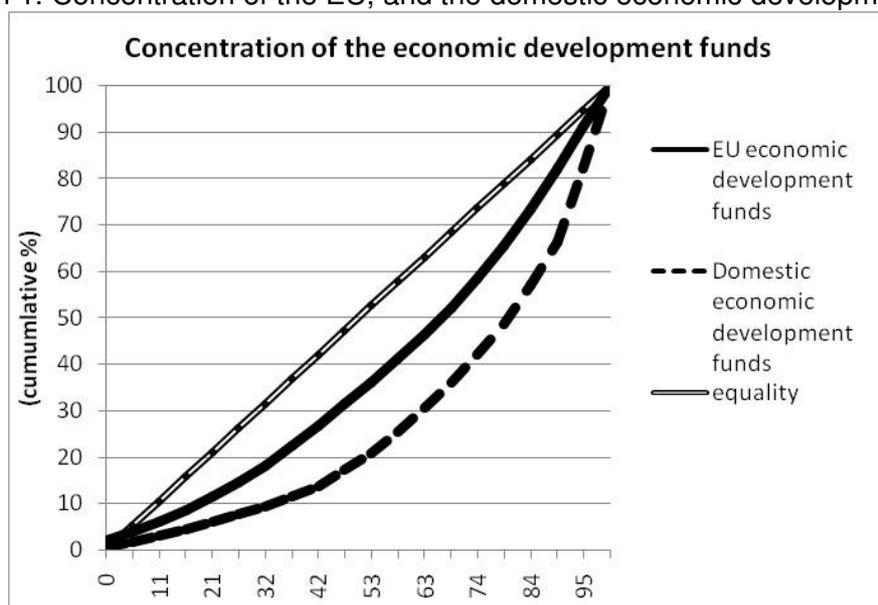
	EU economic development funds (2004-2012)	Domestic economic development funds (2011-2014)
Sum	399048,4	127988,0
Mean	19952,4	6399,4
Standard deviation	9299,1	6092,5
Relative standard deviation*	46,6	95,2
Maximum	35551,7	22891,9
Minimum	7974,6	729,6
Range ratio**	4,46	31,38

* relative standard deviation (%) = (standard deviation / mean) × 100

** range ratio = max/min

Calculating the cumulative share of the two separate economic development investments it can be noticed that both of these policies prove to be rather unequal (see Diagram 1.). both of the curves fall away from the line representing the expected distribution presupposing the pattern of equality. However it can be also deduced that – in accordance with the previous results – in the case of the domestic investments the divergence seems to be higher compared to the distribution of the EU economic development funds.

Diagram 1. Concentration of the EU, and the domestic economic development funds



In order to quantify the extent of the disparity in the light of the distribution of the population we calculated the Hoover indexes – more appropriately the so called Robin Hood indexes (TI 2005: 9) for each statistical data. These indicators (see Table 2.) also confirm the tendencies seen above, that is the allocation of the domestic economic development instruments proves to be more unequal compared to the funds allocated in the frame of the EU development policy: the value of Robin Hood index is much higher – twice as high – in the case of the aforementioned economic development funds. Accurately ‘only’ less than one-fifth (18,9%) of the EU economic development

funds should be reallocated so that the distribution of the investments fit the distribution of the population, nevertheless more than one-third (37,9%) of the domestic economic investments should be somewhere else; i.e. in other part (county) of the country in order to be in accordance with dispersion of the population.

Table 2. Indicators of inequality of the EU,
and the domestic economic development funds

	EU economic development funds (2004-2012)	Domestic economic development funds (2011-2014)
Robin Hood index*	18,9	37,9
Hoover index**	32,2	

* calculated for each development policy separately in the light of the distribution of the population

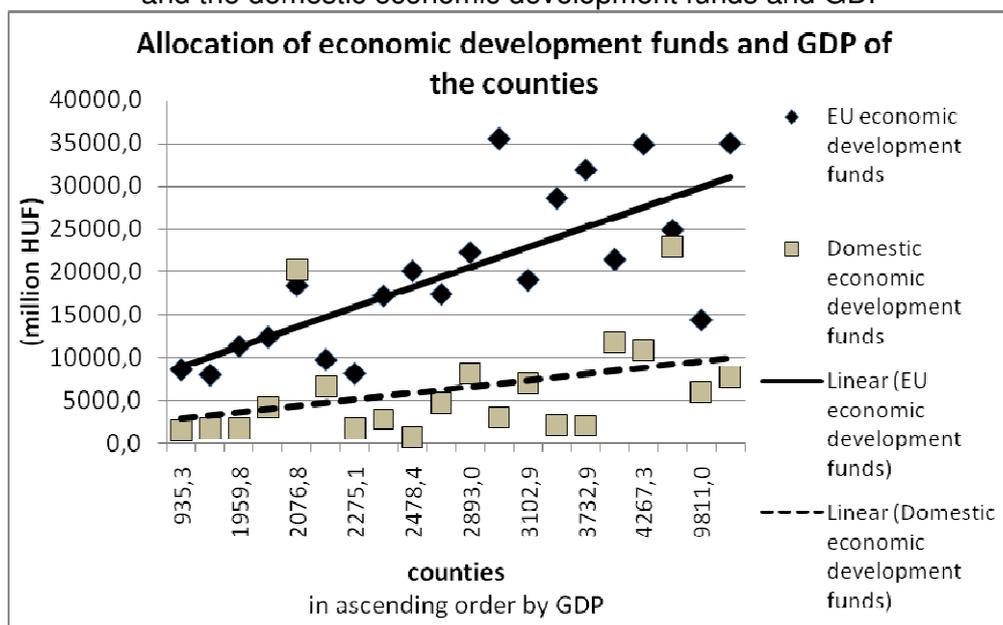
** calculated for the comparison of the two development policies in the light of each other's distribution

We also computed the Hoover index between the two distribution of economic development outcomes to explore to what extent the two separate economic investment allocation systems prove to be in accordance. The value of the indicator is 32,2; that is approximately one-third of the EU economic development funds is divergent compared to the distribution of the domestic economic investments, *and vice versa*: 32,2% of the domestic economic investments should be in other counties of the country in order to fit the allocation pattern of the economic development in the frame of EU policy.

Socio-economic indicators and economic development funds absorption

Both the EU and the domestic economic development funds tend to be more frequent in those areas of Hungary where the level of development measured by the values of *gross domestic product* (GDP) calculated for the actual time periods is higher (see Diagram 2.). This trend seems to be more characteristic in the case of the EU funds.

Diagram 2. Connection between the EU and the domestic economic development funds and GDP



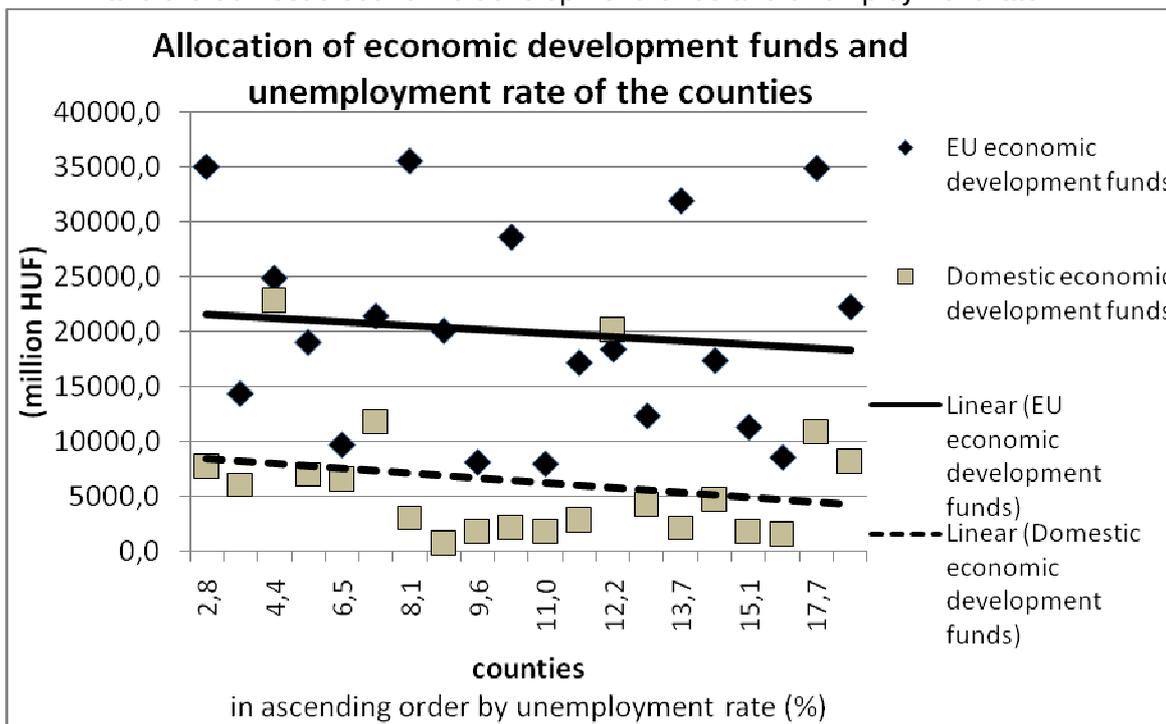
This differences between the two economic development policies is also reflected in the correlation coefficients (see Table 3.). the value of the coefficient is higher ($R = 0,43$) when calculated between the distribution of EU resources and GDP, and a less intense positive connection ($R = 0,11$) can be observed in the case of the domestic economic investments. According to these results it can be said that the economic development funds allocated in the frame of the EU policies prove to be more connected with the initial capacities to generate economic performance while the domestic policy of economic development allocation seems to be less embedded in the inherent economic structure.

Table 3. Correlation coefficients between the EU and the domestic economic development funds and GDP

Correlation coefficients	EU economic development funds (2004-2012)	Domestic economic development funds (2011-2014)
Gross domestic product in the counties (mean of 2004-2011)	0,43	-
Gross domestic product in the counties (2011)	-	0,11

In the case of the comparison of the *unemployment rate* and the distribution of the two different types of economic development funds an – essentially – similar tendency can be revealed (see Diagram 3.)as in the case of the GDP: all of the two outcomes of the separate allocation policies are inversely related. With the increase of the unemployment rate the measure of both the EU and the domestic economic funds is lower. This negative curve is more steep in the case of the domestic funds aimed to support and accelerate economic development.

Diagram 3. Connection between the EU and the domestic economic development funds and unemployment rate



The correlation coefficients (see Table 4.) repeat and express in one single index this connection: between the EU funds allocated in the counties in the period of 2004-2012 and unemployment rate a (negative) coefficient of 0,10 can be measured, and between the share of unemployed ones in the counties and the distribution of domestic economic investment a more remarkable negative correlation coefficient ($R = -0,21$) is detected. That is, a similar kind of negative relation can be explored implying that both the two investment allocation mechanisms prove to be more efficient to distribute economic development resources to the areas of Hungary with more well-established labour market, however this relation can be also interpreted as the counties with a worse employment situation of the population have a smaller extent of economic development funds acquired.

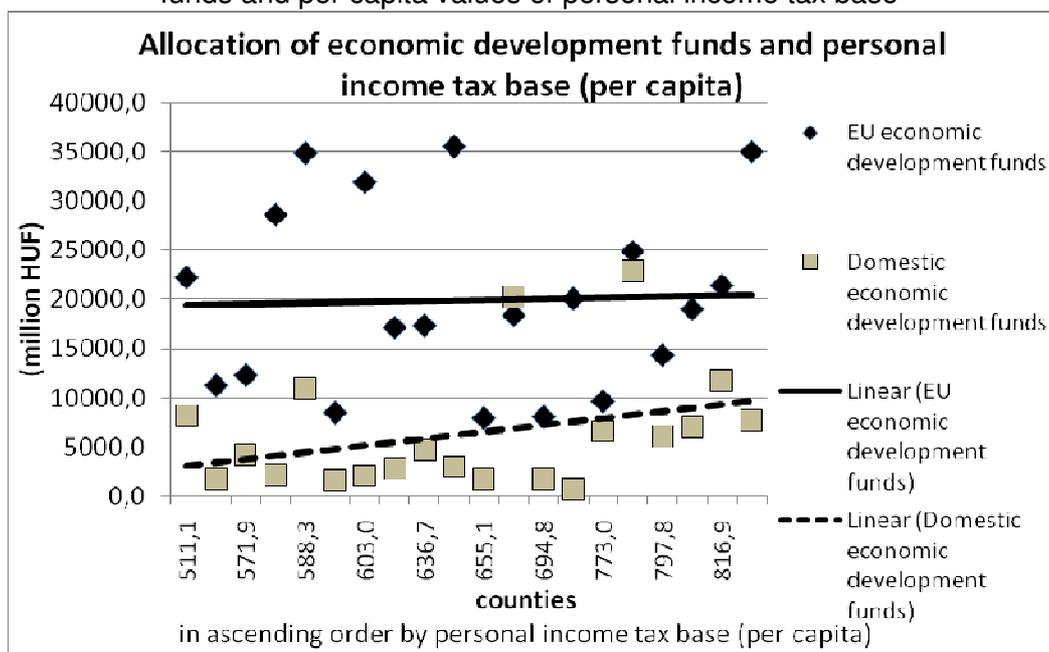
Table 4. Correlation coefficients between the EU and the domestic economic development funds and unemployment rate

Correlation coefficients	EU economic development funds (2004-2012)	Domestic economic development funds (2011-2014)
Unemployment rate in the counties (mean of 2004-2010)	-0,10	-
Unemployment rate in the counties (2010)	-	-0,21

Exploring the connection of the distribution of economic investments and the county-level per capita values of *personal income tax base* there proves to be a noticeable relation in the case of the domestic development resources (see

Diagram 4.), however the tendency is the same but not so noteworthy if we investigate the outcomes of the EU development funds. Namely the higher the per capita indicator of the personal income tax base, the greater the measure of economic development funds allocated.

Diagram 4. Connection between the EU and the domestic economic development funds and per capita values of personal income tax base



Both the similarity of the two trends and the difference of the degree of connection can be recognized calculating the correlation coefficients (see Table 5.). in both cases of development policies the values are positive, but the association is higher calculated for the domestic economic funds ($R = 0,32$) compared to the economic development funds allocated in the frame of the EU ($R = 0,16$).

Table 5. Correlation coefficients between the EU and the domestic economic development funds and per capita values of personal income tax base

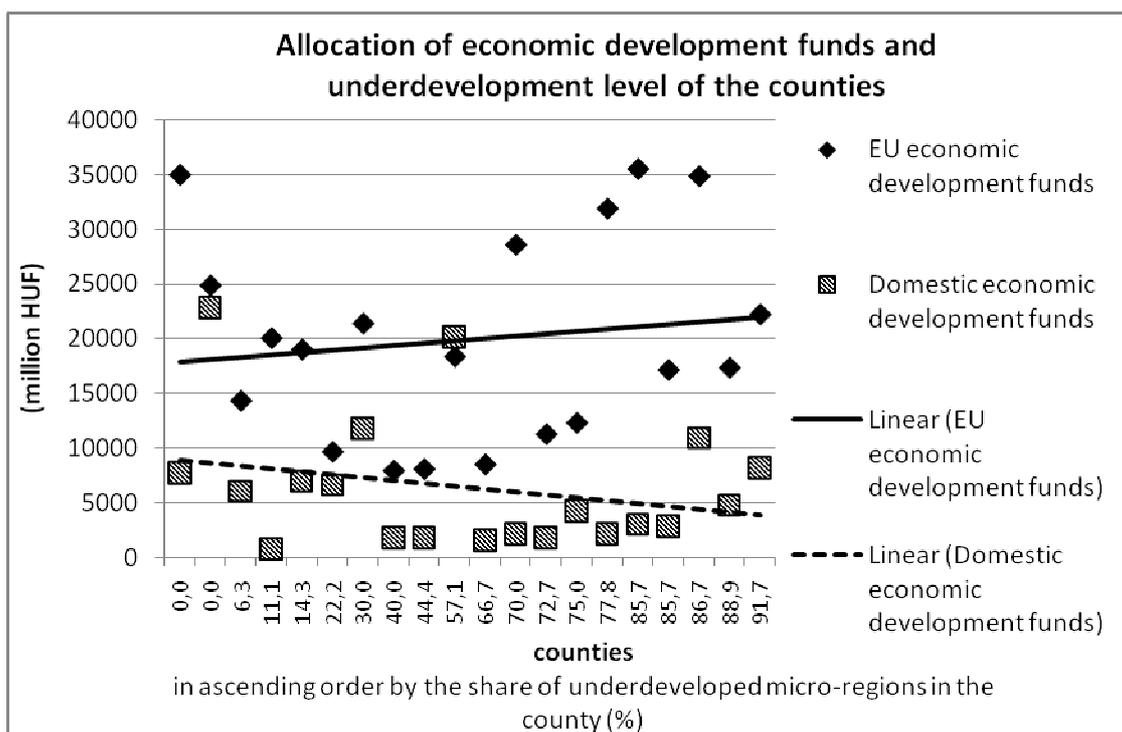
Correlation coefficients	EU economic development funds (2004-2012)	Domestic economic development funds (2011-2014)
Personal income tax base per capita (thousand HUF) (mean of 2004-2012)	0,16	-
Personal income tax base per capita (thousand HUF) (mean of 2011-2012)	-	0,32

In the implementation of the European Union development policy there has been developed and applied in Hungary – in accordance with the EU guidelines and regulations – the system of the so called *preferred* territorial units. These micro-regions and settlements are ascertained by multi-variable statistical analysis in several dimensions and the *less developed* ones are granted a *preferred status* in the development policy (e.g. with a higher support rate) in

order to favour these disadvantageous territories to increase development capacity and acquire development funds. The *distribution* of these *underdeveloped micro-regions* can be – and will be below – interpreted as an indicator of the initial development level of the counties in Hungary. In this perspective it may be an interesting question how the allocation patterns of the economic development investments are related to this underdevelopment level.

According to the results of the comparison it can be stated that in the case of the distribution of the EU economic development funds there seems to be a – slight but – positive connection (see Diagram 5.). the overall trend shows that the higher the share of the underdeveloped micro-regions in a county, the higher the amount of the funds allocated. Contrary to this result in the case of the county-level distribution of the domestic economic investments the trend proves to be negative: the resources allocated in the frame of the domestic economic development policy seem to be higher in the more developed counties – i.e. where the share of underdeveloped micro-regions are smaller.

Diagram 5. Connection between the EU and the domestic economic development funds and the underdevelopment level of the counties



These trends are also confirmed by the correlation coefficients calculated separately for the two different economic investment policies (see Table 6.). a low positive correlation coefficient ($R = 0,11$) can be measured on county level between the distribution of EU economic development funds and the share of less developed micro-regions, and a more intense and negative ($R = -0,30$) value in the case of the domestic economic investments. Namely the EU-funds seems to be found in higher amount in the less developed territories of the

country, while the domestic resources of economic development tend to be more frequent in the more developed areas of Hungary.

Table 6. Correlation coefficients the EU and the domestic economic development funds and the underdevelopment level of the counties

Correlation coefficients	EU economic development funds (2004-2012)	Domestic economic development funds (2011-2014)
Share of underdeveloped micro-regions in the counties (%)	0,11	-0,30

Concluding remarks

According to the results of the analysis it can be concluded that (1) the main statistics confirm the fact that the economic funds of the European Union allocated in Hungary in the period of 2004-2012 are much larger than the domestic funds between 2011-2014, however the values of some relative indicators (range ratio, relative standard deviation) imply that (2) the distribution of the domestic economic investments proves to be much more unequal: there can be measured a higher dispersion of the county-level aggregated values of funds and a larger difference between the lowest and highest values. The concentration measures of Robin Hood index display also (3) a greater centralization of funds compared to the county-level distribution of population in the case of the domestic economic policy. The (4) relation between the aggregated value of gross domestic product and the distribution of the separate economic development investments are positive in both cases, although the measure of the connection is lower in the case of the domestic economic development funds. Contrary to the previous results, (5) both forms of the economic investments tend to be allocated in higher amount to the areas of the country with lower rate of unemployment, and this trend is more remarkable in the case of the domestic funds. Personal income tax base per capita proves to be an indicator with a similar tendency of economic funds distribution: (6) the fiscal resources can be observed in higher amount in the counties with better – higher – personal income tax base values, especially again if we investigate the domestic funds. Last but not least in the light of the share of underdeveloped micro-regions in the counties there can be explored a remarkably different relation in the case of the separate economic policies: (7) contrary to the economic development funds allocated in the frame of the EU development policy that rather tend to be allocated more frequently in the more underdeveloped counties, the domestic economic development investments are in lower amount in the more underdeveloped areas of Hungary. In a broader sense the findings above *may be* – considering all the possible distorting factors as for example the roughness of data sources, the aggregation level, the possible role and differences of trend effects – summarized as the EU economic development funds seem to be more efficiently allocated in the less developed regions of the country, while the domestic economic development investments rather tend to further broaden the inequality of development. This different

pattern of economic fund absorption pattern *might* be explained by the institutional regulation – highlighting horizontal principles (here to mention primarily territorial cohesion) – of the allocation of European Union development funds and the lack of a kind of this administrative control in the case of the domestic economic development policy, however – obviously – it can not be definitely stated, that the difference is directly inflicted by the distinct management principles itself. Rather we consider these findings as *some* empirical evidence to build on more detailed hypotheses and more complex research designs in order to confirm or reject the results. These may be the future directions of this research project.

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Appendix

A1. Details of the variables

Variables	Data description	Source
EU economic development funds (2004-2012)	County-level aggregation ⁴ of the European Union economic development funds (absorption data of ECOP; Economic Competitiveness Operational Programme between 2004-2006; and EDOP; Economic Development Operational Programme between 2007-2012) allocated in Hungary between the overall period of 2004-2012	Online statistical database of the Centre for Economic and Regional Studies of the Hungarian Academy of Sciences (Regional Database; www.regionaldata.org)
Domestic economic development funds (2011-2014)	County-level aggregation of the economic development investments of Hungary allocated in the period of 2011-2014	Statistical database published online by www.origo.hu in 2014. 11. 10.

⁴ Included Budapest as a separate territorial unit in all cases of the variables.

Population in the counties (mean of 2004-2012; 2011-2012)	Average values of population (capita) on county-level accordingly between 2004-2012 and 2011-2012 to calculate Robin Hood indexes	Online statistical database of the Centre for Economic and Regional Studies of the Hungarian Academy of Sciences (Regional Database; www.regionaldata.org)
Gross domestic product in the counties (mean of 2004-2011; 2011)	County-level data of gross domestic product calculated and collected for the appropriate time periods	Online statistical database of the Centre for Economic and Regional Studies of the Hungarian Academy of Sciences (Regional Database; www.regionaldata.org)
Unemployment rate in the counties (mean of 2004-2010; 2010)	County-level data of unemployment rate (%) calculated and collected for the appropriate time periods	Online statistical database of the Centre for Economic and Regional Studies of the Hungarian Academy of Sciences (Regional Database; www.regionaldata.org)
Personal income tax base per capita (thousand HUF) (mean of 2004-2012; mean of 2011-2012)	County-level data of personal income tax base (per capita) calculated for the periods of 2004-2012 and 2011-2012	Online statistical database of the Centre for Economic and Regional Studies of the Hungarian Academy of Sciences (Regional Database; www.regionaldata.org)
Share of underdeveloped micro-regions in the counties (%)	County-level data of the percentage of the disadvantageous micro-regions (%) calculated according to the governmental decree	Collected and calculated from the online version of the 311/2007. (XI. 17.) governmental decree about the classification of the preferred areas