

Chances of Convergence of the Region of Northern Hungary

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SUMMARY

The period 2007-2013 may be of decisive importance regarding the social and economic processes in the region of Northern Hungary for at least two reasons. The first long-term development program (7 years) was prepared after the changes in economic policy of 1989 in order to improve the competitiveness of the region.

On the other hand, the amount of the funds that can be called (as proved by the analyses) will facilitate to induce a demonstrable economic growth in the region.

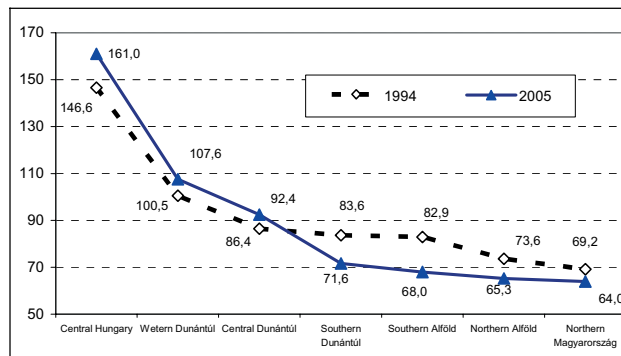
The plans take a change in paradigm into account: the convergence of the region is planned to be based on creating and strengthening the foundations of a competitive economy.

If the political intention will back these efforts, it will be possible to stop the process of the region of Northern Hungary drifting towards the periphery that has been going on for two decades now, and there will be hope to establish a new expansion path.

INTRODUCTION

In the past fifteen years the socio-economic-ecological maps of the post-socialist countries, among them that of Hungary, have undergone considerable changes.

In the last decade of the 20th century economic polarisation between the regions has intensified, and as proven by the statistical data, the regional development policy (which has treated the convergence of the backward regions as a declared top priority since 1995) has not achieved any spectacular results. The tendency has namely not changed in effect: the better-off regions in Hungary have got into a more advantageous position¹ and the disadvantage of the backward regions (although only by a few per cents, but still) continued to increase (Figure 1)², while only the smaller part of the regional development subsidies found its way to the backward regions, e.g. to the region of Northern Hungary (Figure 2).



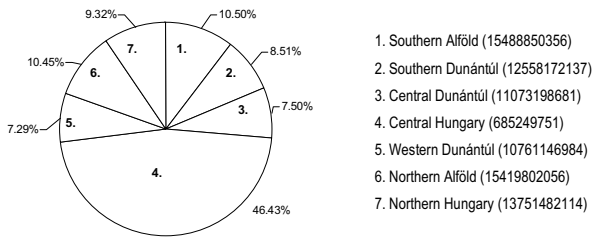
Source: Central Statistics Office (KSH)

Figure 1. Per capita GDP as percentage of the national average

¹ The Central Statistics Office (KSH) has been calculating data of regional and county GDP suitable for measuring and comparing the economic performance since 1994.

² The ranking of the regions has not basically changed in the nine years till 2003. According to the per capita GDP value, the first three ranks were taken by Central Hungary, Western Dunántúl and Central Dunántúl, respectively, each year. The other four regions have also shown only moderate and temporary steps forward or backward during the years. Although the regions have maintained their rankings according to the status in 1994, the differences between regions representing the extreme values have become more pronounced: the first three regions could claim an even higher percentage of the per capita national average GDP, while the other regions could claim an even lower percentage than nine years before. The region of Central Hungary has shown particular strengthening, while the economic performance of Southern Alföld was the poorest.

By contrast, as can be seen from the allocation of funds, the most developed region of Central Hungary receives nearly half of all the funds (Figure 2).



Source: National Development Office

Figure 2. Per capita decentralised regional development subsidy, 2004 (bn. HUF)

It poses a question what quota of the new seven-year EU budget the backward regions will be able to call, and whether the funds collected will promote convergence. (According to preliminary calculations in 2007-2013 Hungary will be able to call annually two and a half times as many funds - 3.5-4 % of the Hungarian GDP - as it did in the first three years after accession.)

It is justified to raise the questions: to what extent will the next 7 years contribute to the convergence of the region of Northern Hungary; will the negative tendency prevailing for more than 15 years be reversed, and if it is, what extent of convergence can be counted with?

COMPETITIVENESS VERSUS CONVERGENCE

Uneven regional development (independent of the level of development) can be detected and shown in all the countries of the world³.

The specialist literature of regional economics dealing with the issues presents a basically uniform standpoint regarding the causes underlying regional disparities and the issue of the state (budgetary) intervention required for their moderation; but is less uniform in judging the issue of the nature of the role.⁴

Beyond the differing economic policy approaches, the fact that for a long time less attention has been devoted to the socio-economic usefulness of development

interventions as well as to showing their impact on regional convergences also plays a role. Perhaps it can also be attributed to that that the rate of regional convergence has fallen behind the desirable level in most countries in spite of the increasing subsidies.

In the regional policy of the EU, the Lisbon strategy⁵ launched a change in paradigm. In addition to the previous, almost exclusive objective of convergence, a growing emphasis is laid on increasing competitiveness. This means that it is becoming more and more obvious: when there are no measures strengthening competitiveness, convergence will proceed much more slowly. On the other hand, the deterioration of the competitive position of the Community will generate budget disputes again and again, as a result of which fewer and fewer funds can be obtained for funding the programs designed to achieve convergence.

These signs have already appeared; in spite of the emergence of the new member states (an increase in the number of "mouths to be fed" and a growth in regional disparities), the amounts of the funds available for regional equalisation have not increased in specific terms. Therefore more definite changes in the methodology are needed, many more characteristic efficiency analyses and impact studies have to be performed than at present at the national level in the allocation of the funds. The practice in Hungary also has to be changed, for today we only now and again find ex-ante analyses. Although the legislation background is well-ordered in Hungary (Act XXI of 1996 on regional development and country planning obliges the government to report biannually to the Parliament on the development of regional processes and the experiences of regional development policy⁶), however, as it is proven by the first two reports, no essential steps have been taken towards the allocation of funds with efficiency as its priority.

We are of the opinion therefore that, in the planning phase preparing the allocation of funds in the next period, it is justified to raise the question of what impact regional development interventions have.

This is a particularly exciting exercise if we think of the fact that the Community funds available annually in the period 2007-2013 are by orders larger than those in 2004-2006.

³ An example is the post-accession European Union, where taking the average of the 25 member states as the basis, in the 10 regions with the highest performance in 2004 the per capita GDP was 189 % of the average, while in the 10 most backward regions it was 36 %. As a result, the per capita GDP of 64 regions (more than one fourth of the population of the Union) does not reach an average of 75 %. In the new member states this affects 90 % of the population (with the exception of the regions of Prague, Bratislava and Budapest as well as the population of Cyprus and Slovenia, practically all the population). In the EU-15 it affects only 13 % of the population. (http://uropa.eu.int/comm/regional_policy/sources/docoffic/official/reports/interim3:en.htm).

⁴ The specialist literature mentions several causes of the development of regional disparities, such as intraregional factor mobility (e.g.: Romer [1990]) and differing growth rate of trade (e.g.: Grossmann – Helpman) [1990]), sector-specific differences, differences in the efficiency and diffusion rate of R&D intensity (Sepl – Feser – Schulze [2005]), differences in transaction costs, qualifications (e.g.: Haas – Möllner [2001]), as well as in location factors (e.g.: Niebuhr [2000]).

⁵ In March 2000 the leaders of the member states set the objective that by 2010 the EU "shall become the most dynamic and competitive knowledge-based economy in the world", "which is capable of sustainable economic growth, with more and better jobs and greater social cohesion and respect to the environment."

⁶ The formal framework of the report is included in the National Regional Development Concept adopted by an order of the Parliament in 1998, (resolution of the Parliament No. 35/1998/III.20.)

On the other hand, the domestic own resources required for making use of the funds will practically deplete the domestic budgetary allowance for development (that is, beyond what is formulated in the National Reference Framework being prepared now, there will be hardly any government funds for funding further programs). Therefore it does matter what for and with what efficiency the potential financial estimates are used!

The efficiency of using the available funds (beyond the standards of the programs and projects) depends to quite a considerable extent on how the practice in planning in Hungary changes; that is:

- Does the decision maker intend to demonstrate the expected and actual impacts? Does the amount of the impact shown by the experts play a role in the allocation of funds; are the decision makers influenced in drawing up the financial plans by the social usefulness of the programs, by the extent of their regional impacts, or will they ignore them?
- Are the experts involved in regional planning familiar with the methods of impact studies?
- Are the data supplied by the Hungarian statistics system sufficient to show regional impacts?
- Can the threshold of subsidies quantified, i.e. subsidies whose consequences cannot be measured any longer (in such cases, instead of a concentration of funds, politics uses the principle of 'all those involved should be given a little')?
- What accountability can be expected; will there be any consequences if the usefulness of the subsidy falls short of that predicted in the ex-ante analysis?

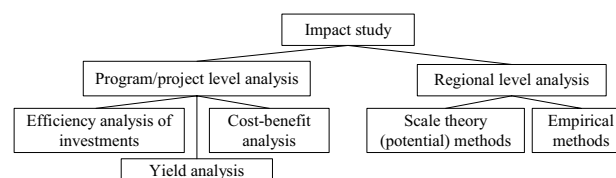
CURRENT PRACTICE

The developers of Hungarian regional development policy (following the change in paradigm after 1989) have not really brought anybody to account. The decision makers did not want (or did not dare) to face the low efficiency of the application of funds or its unsuccessfulness, the creation of virtual jobs financed from public moneys, etc. (It cannot be a coincidence that e.g. in the county of Borsod-Abaúj-Zemplén there was not a single ex-post impact study on the regional development subsidies used in 1995-2004, while at the same time a number of studies deal with praising the supports granted to the region.)

It seems that politics has chosen a more convenient and safer method; it has developed 'soft' aspects of assessment, which are suitable for wrapping the subjective (not infrequently selfish) intentions underlying the decisions in an appearance of objectivity.

In the past 15 years demonstrating the expected impacts of regional development was only incidentally dealt with in the period of program making. If, however, there are some examples, mostly verbal impact studies were written, which do without numerical analyses (e.g.: in terms of the number of employed, creating new jobs, and

retaining the existing ones, etc.). It is even harder to find examples for showing the expected and actual regional impacts of the development programs, while there are several dozen methods known for demonstrating the consequences of regional development programs (projects) ranging from the simple ones to more complex empirical methods (Table 3).



Source: constructed by the author

Figure 3. Methods for demonstrating regional development impacts

The use of empirical methods obviously requires more time and better professional skills, which may contribute to the fact that we can mostly find verbal analyses in the Hungarian practice.

POTENTIALS AND LIMITS

The development objectives of the next seven years (2007-2013) will be fundamentally influenced by the following:

- The region of Northern Hungary is one of the least developed regions of the European Union in economic terms.
- The education level of the Roma population concentrated regionally (living mainly in less developed small regions and in certain parts of the towns of Miskolc and Salgótarján) is low, which results in serious welfare and social problems.
- In the region of Northern Hungary there are few large companies having a strong market position and considerable capital, so the large towns of the region are unable to counterbalance the economic attraction and central role of Budapest.
- The small and medium-sized enterprises of the region lack capital, are struggling with regular liquidity problems, their market positions and competitiveness are weak, and show little willingness to cooperate.
- In the centres of the deprived small regions there is a shortage of industrial zones, incubator houses and related consultancy services promoting the settlement and operation of enterprises or helping new ones. The transfer organisations encouraging the innovation activities of enterprises are missing or are of low standards; the relations between R&D organisations and enterprises are insufficient.
- The income-producing capacity of tourism in the region lags behind the potentialities, primarily due to the non-harmonised and low-standard product structure and supply of accommodations.

➤ Unemployment in the region of Northern Hungary is higher than the national average, the rate of those permanently unemployed is high, multi-general unemployment is emerging; the level of employment is low, the number of people drawing disability pensions and social welfare exceeds the national average, particularly in areas with small villages.

➤ The health of the population is poor, there are many inactive people and disability pensioners, and the mortality rate is higher than the national and European average. The population of the region and that of the more backward small regions is continuously aging.

➤ Lower income levels in the region, the population getting poorer and poorer.

➤ The education level of the population is lower than the national average, and the number of jobs employing people with higher qualifications is few (particularly in the medium-sized and small towns).

➤ The towns in the north of the region (Salgótarján, Ózd, and Sátoraljaújhely) are difficult to reach by road; and their public transport infrastructure is obsolete (coach stations, passenger information systems, etc.).

➤ There are large contaminated industrial areas left after the factories of heavy industry (e.g.: in Ózd, Salgótarján, Kazincbarcika, and Miskolc), and landscape wounds (pit-heaps).

DEVELOPMENT OBJECTIVES

The development program of the region of Northern Hungary for 2007-2013 aims to strengthen the competitiveness of the region, and to reduce the regional, social and economic differences within the region at the same time.

The program formulates five priorities:

- Creating the knowledge-based *competitive economy* of the region.
- Strengthening *the tourism potential*, improving the quality of products and services based on natural and cultural values, creating new jobs, a sustainable application of the resources.
- Rehabilitation of urban areas*, renewal of urban areas being segregated and contaminated in social terms, strengthening social cohesion.
- Improving regional infrastructure*, including the accessibility of the centres of small regions, a renewal of humane public services, improving IT-based public services.
- Technical assistance* to support the implementation of the program and to achieve the objectives of the program.

In line with the above objectives, four programs (1. Creating a competitive economy; 2. Strengthening the tourism potential; 3. Rehabilitation of urban areas; and 4. Improving regional infrastructure) have been formulated for the period 2007-2013 together with the related objectives (Table 1).

Table 1. Strategy and priority level expected impacts, quantification of indicators

Objectives	Indicators	Targets (2014)
Priority 1: Creating a competitive economy	Number of jobs created (pcs)	4,000-4,500
	Number of enterprises settled in the supported logistics parks (pcs)	25-30
	Number of logistics centres supported (pcs)	4-5
	Number of new, supported cooperation with enterprise and/or R&D institutions (pcs)	25-30
	Number of supported investments in creating jobs (pcs)	200-300
	Number of supported technological innovations in the enterprises (pcs)	350-400
	Number of supported innovation services in the SMEs (pcs)	350-400
	Number of supported innovation-technological centres (pcs)	4-6
	Number of persons participating in training (pcs)	1,300-1,500
Priority 2: Strengthening the tourism potential	Number of organisations transferring supported innovation (pcs)	25-30
	Number of jobs created in tourism (persons)	4,500-5,000
	Number of commercial accommodations (pcs)	41,000-43,000
	Average time spent (nights)	2.7-3
	Number of nights per 1000 permanent residents (nights)	2,100-2,300
	Supported priority tourism products, attractions (pcs)	40-50
	Number of supported refurbished accommodations (pcs)	12,000-15,000
	Number of supported tourism accommodations (pcs)	200-300
	Number of supported tourism management organisations (pcs)	12-16
Priority 3: Rehabilitation of urban areas	Number of those participating in training (persons)	800-1,000
	Number of jobs created due to support (persons)	4,000-5,000
	Number of organisations, enterprises settled or offering services in rehabilitated areas (pcs)	150-200
	Number of those successfully completing training (persons)	700-800
	Number of employees returning to the labour market (persons)	700-1,000
	Number of segregated parts of towns supported (pcs)	10-15
	Number of centres of towns supported (pcs)	30-35
	Number of brown-field areas rehabilitated (pcs)	7-10
	Area of brown-field areas rehabilitated (ha)	130-170 ha
	Area of towns rehabilitated (ha)	150 ha
Number of inactive persons supported in employment programs (persons)	3,000	

Objectives	Indicators	Targets (2014)
	Number of supported employment initiatives (persons)	30
	Number of persons participating in training (persons)	1,000
Priority 4: Improving regional infrastructure	Number of students in supported educational institutions (persons)	50,000-60,000
	Number of local governments interested in IT development (pcs)	300-400
	Number of supported small region programs (pcs)	82-86
	Number of constructed or reconstructed roads with 4- or 5-digit markings (km)	1,400-1,600
	Number of supported public transport service projects (pcs)	20-25
	Number of educational institutions improved or refurbished (pcs)	150-200
	Number of health institutions improved or refurbished (pcs)	70-80
	Number of projects supported in order to modernise public administration (pcs)	80-100

Source: NORDA (2006)

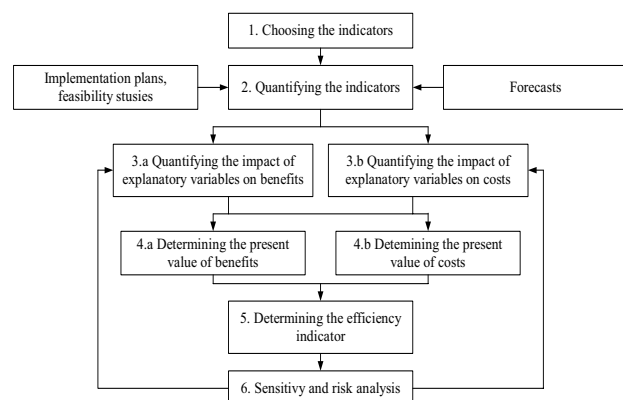
The program counts with EU funds of approximately 399.0 billion HUF arriving in the region of Northern Hungary in the period 2007-2013 (Table 2).

Table 2. Development programs of the region of Northern Hungary (2007-2013)

No.	Program	Sub-program	Funding requirement	Grand total (bn HUF)
1.	Creating a competitive economy (techno-region)	1.1 Developing integrated supplier networks in the region.	15.0	73.0
		1.2 Attracting environmental protection industry	20.0	
		1.3 Biomass energetics industry	15.0	
		1.4 Establishing a regional knowledge centre	8.0	
		1.5 Developing a regional logistics network	10.0	
		1.6 Developing business services supporting enterprises	5.0	
2.	Developing a regional tourism network together with the region of Northern Alföld	2.1 Developing a coherent and integrated communication strategy, developing region-marketing tools	0.5	101.0
		2.2 Establishing a joint regional cluster centre with the region of Northern Alföld	3.0	
		2.3 Supporting the establishment of regional tourism clusters	82.0	
		2.4 Development of program-related services	10.5	
		2.5 Development of program-related human resources	5.0	
3.	Creating the conditions for high-standard life, rehabilitation of urban areas			111.0
4.	Improving regional infrastructure			110.0
Total				395.0

EXPECTED BENEFITS OF THE PLANNED PROGRAMS

The ex-ante evaluation of the planned programs was performed by cost-benefit analysis (Figure 4).



Source: constructed by the author

Figure 4. The logical process of ex-ante-type cost-benefit analysis

The allowable costs were classified in three groups:

- costs arising in connection with preparation (e.g.: preliminary studies, feasibility studies, etc.);
- costs incurred during implementation (e.g.: property development costs, costs of purchasing machinery and equipment, costs incurred by public procurement, account management, and leasing, the material, energy, wages and contribution costs of the implementation, etc.); as well as
- annual costs incurred by operation (e.g.: management, maintenance, troubleshooting, etc.). Drawbacks affecting society (and emerging in the course of realisation of a project) are also included here (e.g.: increase in the load on the environment, health deterioration, etc.).

Costs were determined by a calculative method (e.g. technical, time, etc. norms) on the basis of the feasibility studies or based on the costs of similar programs.

The system handles three benefit tables: direct benefits (H_1); indirect benefits (H_2) and spill-over benefits (H_3). Accordingly, the benefit of a program (H) is given by the sum of the three factors depending on a given utilisation (Q): $H(Q) = H_1(Q) + H_2(Q) + H_3(Q)$.

- a) *Direct benefits* appear in the implementation of the project (e.g.: surplus sales revenues, savings in fuel costs, savings in maintenance costs, etc.).
- b) *Indirect benefits* take into account income arising for the budget (e.g.: personal income tax, contributions by employers, social security contributions, value added tax, company tax, duties, etc.), savings for the budget due to the retention of jobs, as well as savings expressed by shadow price (e.g.: savings arising from a reduction in the number of road accidents, benefits due to a reduction in the time to get to work, benefits due to a reduction in the load on the environment, etc.).

In determining indirect benefits the *multiplication factor*, which expresses the spill-over effect of the intervention (appearing in a different sector), plays an outstanding role.

In line with the specialist literature, the software interprets four multiplication factors in theory.

➤ The income multiplication factor, which expresses the spill-over effect of the expenditure effected in a given sector and appearing in a different sector.

➤ The output multiplication factor, which expresses the impact of unit output in the transportation sector (under examination) appearing in a different sector.

➤ The employment multiplication factor, which expresses the impact of unit expenditure in the transportation sector (under examination) on employment in other sectors.

➤ The budget multiplication factor, which expresses the impact of unit expenditure in the transportation industry (under examination) on the central budget.

It was quite a job to determine the current output multiplication factor, i.e. to take into account the spill-over effect of the programs within the region.

The specialist literature offers three models for solving the task: the balance of sectorial connections, the Computable General Equilibrium (CGE), and the Social Accounting Matrix (SAM).

In view of the fact that the Central Statistics Office does not quantify the balance of either the country connections or the balance of regional sectorial connections, the multiplication factor was determined on the basis of the data of the turnover between the sectors (Table 3).

- c) *Spill-over benefits*, which express the increase in solvent demand appearing in the region (Table 4).

The program quantifies five indicators of the cost-benefit data determined above (Table 5). Two of them are conservative.

Table 3. The total multiplication factor of the region of Northern Hungary

Sectors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
1. Agriculture	1.40	0.02	0.03	0.01	0.02	0.02	0.01	0.02	0.00	0.01	0.02	0.04	0.31	0.01	0.01	0.01	0.01	0.01	1.96
2. Mining	0.01	1.08	0.03	0.00	0.02	0.01	0.00	0.01	0.00	0.00	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	1.22
3. Food industry	0.04	0.06	1.20	0.01	0.02	0.03	0.01	0.02	0.01	0.02	0.05	0.04	0.02	0.02	0.03	0.02	0.02	0.04	1.66
4. Clothes industry	0.02	0.01	0.01	1.02	0.04	0.02	0.01	0.01	0.02	0.01	0.02	0.02	0.01	0.04	0.07	0.03	0.01	0.02	1.39
5. Other light industry	0.07	0.04	0.05	0.03	1.19	0.03	0.02	0.05	0.01	0.02	0.04	0.02	0.03	0.02	0.02	0.01	0.01	0.01	1.67
6. Chemical industry	0.04	0.02	0.06	0.02	0.03	1.19	0.02	0.08	0.04	0.04	0.18	0.03	0.03	0.02	0.02	0.03	0.01	0.01	1.87
7. Other processing industry	0.01	0.00	0.00	0.10	0.01	0.01	1.01	0.00	0.06	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.29
8. Machine industry	0.03	0.02	0.03	0.02	0.05	0.02	0.02	1.27	0.04	0.02	0.02	0.03	0.02	0.05	0.06	0.05	0.05	0.02	1.82
9. Energetics	0.05	0.03	0.04	0.06	0.07	0.08	0.02	0.02	1.16	0.15	0.03	0.03	0.05	0.04	0.02	0.03	0.02	0.02	1.92
10. Construction ind.	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	1.02	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	1.1
11. Accommodation, catering	0.02	0.01	0.02	0.01	0.01	0.02	0.01	0.01	0.04	0.06	0.11	0.02	0.03	0.02	0.02	0.07	0.02	0.02	0.52
12. Railway transport.	0.14	0.07	0.11	0.03	0.05	0.08	0.03	0.04	0.03	0.05	0.12	1.08	0.10	0.08	0.06	0.06	0.04	0.05	2.22
13. Financial activities	0.02	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	1.05	0.00	0.05	0.01	0.00	0.00	1.22
14. Property	0.03	0.02	0.03	0.02	0.02	0.03	0.03	0.02	0.03	0.01	0.03	0.05	0.02	1.03	0.04	0.03	0.01	0.01	1.46
15. Public admin.	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	1.01	0.01	0.01	0.01	1.15
16. Education	0.01	0.00	0.01	0.03	0.01	0.01	0.03	0.00	0.01	0.00	0.01	0.01	0.01	0.04	0.13	1.04	0.00	0.00	1.35
17. Health care	0.02	0.01	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02	0.02	0.03	0.03	1.05	0.05	1.39
18. Other services	0.03	0.02	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.04	0.02	0.04	0.04	0.03	0.05	0.04	0.04	2.23	2.78
Total	1.95	1.42	1.7	1.41	1.6	1.62	1.27	1.61	1.51	1.5	1.66	1.49	1.79	1.45	1.64	1.49	1.31	2.51	28.93

Interpretation: Impact of unit demand for the products of the sector in the column on the output of the sectors in the rows with consideration of the induced impacts of spending the wages.

Source: Joint calculations by the county headquarters of the Central Statistics Office in Borsod-Abaúj-Zemplén and the Department of Regional Economics of the University of Miskolc.

Table 4. Equations of benefit elements (REINPLAN©)

Direct benefit	<p>Sales revenue: ΔSI (HUF) = IND * FA. Revenue from contribution by employers: ΔET (HUF) = ALKSZ * BATL * MJAR. Revenue from personal income tax: ΔPI (HUF) = ALKSZ * BATL * SZJA. Replacement of unemployment benefit: ΔNUE (HUF) = $\Delta ALKSZ * MNELK * MJAR * 0.75 * 0.85$. Surplus company tax: ΔCT (HUF) = NA * ADOK Local industrial tax: ΔLT (HUF) = NA * ATLA VAT ΔVTI: (HUF) = B * AFAI Surplus VAT (services): ΔVTS (HUF) = A * AFASZ Surplus local duty revenue: ΔLTP (HUF) = B * I</p>	<p>IND – indicator FA – specific price (HUF/indicator) ALKSZ – number of employees in the sector (person/year) BATL – gross average wages (HUF/person/year) MJAR – contribution by employers (%) SZJA – average personal income tax rate (%) $\Delta ALKSZ$ – increment in the number of employees (person) MNELK – number of unemployed employed due to the program (person/year) MJAR – unemployment benefit (HUF/person) A – gross sales revenue (HUF) NA – net sales revenue (HUF) B – investment costs (HUF) AFASZ – VAT rate for services (%) AFAI – VAT rate for capital goods (%) ΔAB – net (VAT-free) increment of the revenues of the sector (HUF) ADOK – average company tax rate (%) ATLA – average tax rate (%) Mi – oilio sector multiplication factor I – average contribution (%) NATL – net average income (HUF) FI – consumption rate (%)</p>
Indirect benefit	<p>Surplus revenue from other sectors: ΔSII (HUF) = $\Delta AB * M_i$ Surplus revenue from contribution by employers in other sectors: ΔETI (HUF) = $\Delta ALKSZ * M_i * BATL * I$ Personal income tax from other sectors ΔPII (HUF) = $\Delta ALKSZ * M_i * BATL * SZJA$ Replacement of unemployment benefit arising in other sectors: ΔNUI (HUF) = $\Delta ALKSZ * M * BATL * SZJA$ Company tax revenue from other sectors: ΔCTI (HUF) = $\Delta ALKSZ * MUNKN * M * MNELKJ * ATLA$ Revenue from local industrial tax from other sectors: ΔLTI (HUF) = $\Delta AB * M_i * I$ VAT (services) from other sectors: $\Delta VTSI$ (HUF) = $\Delta AB * M * AFASZ$</p>	
Spill-over benefit	<p>Benefit of increase in income: CB (HUF) = $\Delta ALKSZ * NATL * FI$</p>	

Table 5. Profit and loss indicators of cost-benefit analysis (constructed by the author)

Type	Indicator		
	Definition	Interpretation	Notation
Return rate (M)	$M_t = \frac{\sum_{t=1}^n H_t \frac{1}{(1+r)^t}}{\sum_{t=1}^n K_t \frac{1}{(1+r)^t}}$	The program is socially beneficial if $M > 1$	H – benefit K – cost
Benefit present value indicator (HJ)	$HJ_t = \sum_{t=1}^n H_t \frac{1}{(1+r)^t} - \sum_{t=1}^n K_t \frac{1}{(1+r)^t}$	The program is socially beneficial if $H > 0$	
Budgetary return (KV)	$KV = \frac{TJ}{KVJ}$	To what percentage the subsidy granted for the implementation of the program is returned from the budgetary revenues during time T.	KVJ – present value of budget revenue TJ – present value of subsidy
Import ratio indicator (IH)	$IH = \frac{KJ}{IJ} \cdot 100$	What percentage are imports of the costs arising during time T of the program.	IJ – present value of imports KJ – present value of costs
Benefit intensity (HI)	$HI_t = \frac{\sum_{t=1}^n H_t \frac{1}{(1+r)^t}}{\sum_{t=1}^n T_t \frac{1}{(1+r)^t}}$	What percentage of the subsidy is returned from the benefit.	T – subsidy

FINDINGS OF THE IMPACT STUDIES

Costs were determined on the basis of feasibility studies built on estimates by experts. In the calculations a 3 % increase in wages and a constant contribution percentage were used.

According to preliminary calculations by the experts, the programs will induce a considerable demand for employment (Table 6).

Table 6. Aggregate job creating impact of the programs

Program	Persons
Creating a competitive economy	25,000
Regional tourism network	29,000
Improving the conditions for high standards of life	21,000
Total	75,000

Regarding the current output multiplication factor the assumption was used that it was static in the period under examination, i.e. in 2007-2013 the values of the elements of the matrix were constant. The social usefulness of all the three programs is clear, however, as regards their impacts, the three programs do not show the same strengths (Tables 7 and 8).

The program of competitiveness generates the highest added value, therefore this program has obviously the highest return rate and benefit intensity as well; while the program of improving the standards of live shows the lowest specific values. This latter one aims at creating social cohesion primarily.

Table 7. The cost-benefit indicators of the three programs

Indicator	Program of competitiveness	Program of tourism development	Program of improving the standards of life
Return rate (M)	7.29	4.58	3.09
Benefit present value (HJ)	572.983 bn HUF	395.627 bn HUF	371.114 bn HUF
Benefit intensity (HI)	16.28	6.10	1.96

INVESTIGATING THE REGIONAL IMPACT

The investigation of regional impact has a considerable econometric literature⁷. The models adopt mostly the Cobb-Douglas production function (Table 9).

Table 8. The cost-benefit curves of the programs

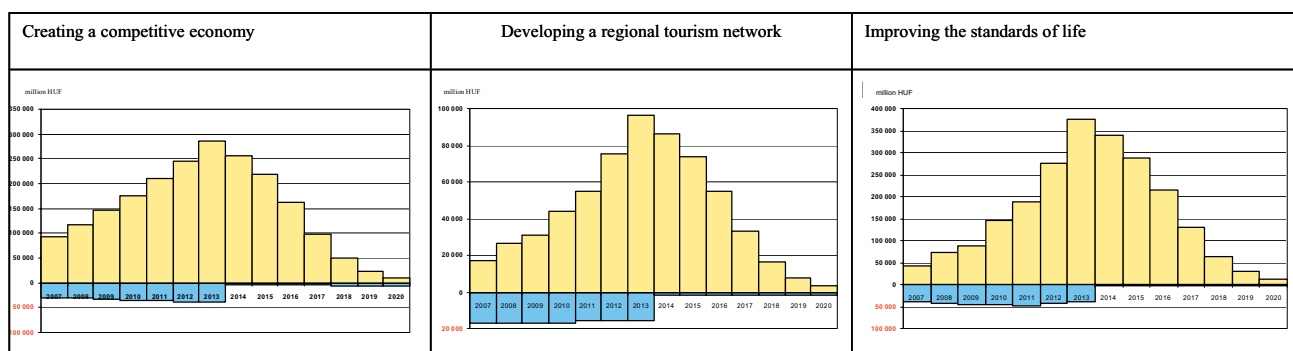


Table 9. Production functions (constructed by the author)

Author	Model	Notation
Eckey/ Kosfeld/ Türek [2000]	$Y=f(\alpha_t, L, H, K)$ $\ln Y = \ln \alpha_t + \alpha_L \cdot \ln L + \alpha_H \cdot \ln H + \alpha_K \cdot \ln K$ $+ \frac{1}{2} \cdot \beta_{LL} \cdot (\ln L)^2 + \frac{1}{2} \cdot \beta_{HH} \cdot (\ln H)^2 + \frac{1}{2} \beta_{KK} \cdot (\ln K)^2$ $+ \beta_{LH} \cdot \ln L \cdot \ln H + \beta_{LK} \cdot \ln L \cdot \ln K + \beta_{HK} \cdot \ln H \cdot \ln K.$	α_t – level of knowledge L – labour H – human capital K – physical capital
Sala-Martin [1993]	$Y = f(t, K, L)$ $Y = A(t) K^\alpha L^{1-\alpha}$	A – technical level t – time L – labour K – capital

We attempted to demonstrate regional impact on the basis of two indicators (added value and changes in regional GDP) (Table 5). The added value (HÉi) of a particular sector (i) of the region was determined using the following relationship:

$$HÉi = \alpha + \beta Bi + \gamma ALKi + \delta MKi + \varepsilon CPI,$$

where:

➤ i = number of sector,⁸

- α = constant,
- $\beta, \gamma, \delta, \varepsilon$ = parameters,
- Bi = investment effected in the sector in a given year,
- ALK = number of employed in the sector in a given year,
- MKI = average wages in the sector,
- CPI = average inflation.

⁷ The models have developed two groups (with some simplification). The first includes the models that aim at quantifying the impact of economic growth on changes in regional GDP (e.g.: Lucas [1988], Grossmann – Helpman [1989]); the second group aims at modelling regional convergence.

⁸ The model REINPLAN© developed by the Department of Regional Economics of the University of Miskolc in 2005 can handle 18 sectors simultaneously (agriculture, mining, food industry, clothes industry and other light industry, other processing industry, machine industry, energy and water supply, construction industry, trade, accommodation, catering, transportation, storage, communication, financial activities, property deals, public administration, education, health care and other services).

Regional GDP is equal to the cumulated added value in the sectors: $GDP = \sum_{i=1}^n HE_i$.

The output indicators under examination were determined in the econometric model were determined on the basis of two hypotheses:

- Supposing a ‘natural’ growth; that is the changes will develop in line with the current economic policy practice;
- Supposing a ‘generated’ growth; that is what change can be quantified as a result of the subsidy.

The difference obtained between the data as a result of the quantification of the two functions gives the extent of the expected change.

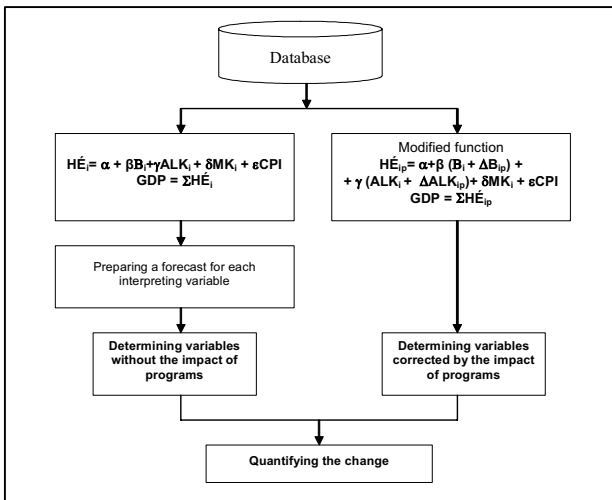


Figure 5. Model of demonstrating regional impacts (REINPLAN©)

In determining a national tendency, we counted with the following:

- The rate of technological development remains unchanged;
- The growth rate of GDP in Hungary will exceed the EU average by 2-2.5 per cent in the next 10-15 years.

Regarding regional tendencies we applied the following assumptions:

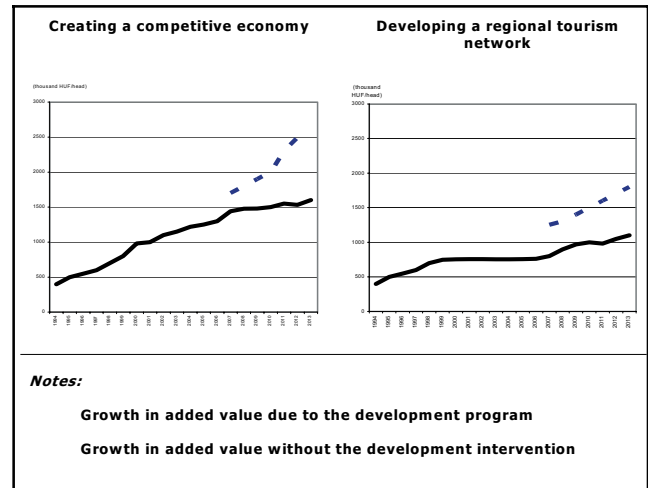
- The sectorial weight of mining is low in the region and is expected to remain so;
- The agriculture in the region will have a similar fate in the years to come.

CHANCES OF CONVERGENCE

The mezo-econometric model was used to find the answer to the question whether it will be possible to achieve a growth rate higher by 2-2.5 per cent, which would enable the region to converge upon the average of the domestic GDP in the long run.

Analyses of the regional impact prove that the impact of the planned programs in increasing the added value may ensure a growth above the national average by 2.0 – 2.2 per cent in the period 2007-2009, and by 2.4 – 2.6 per cent in the period 2009-2013 for the region (Table 10).

Table 10. Regional impact of the development programs



SUMMARY

The period 2007-2013 may be of decisive importance regarding the social and economic processes in the region of Northern Hungary for at least two reasons. The first long-term development program (7 years) was prepared after the changes in economic policy of 1989 in order to improve the competitiveness of the region.

On the other hand, the amount of the funds that can be called (as proved by the analyses) will facilitate to induce a demonstrable economic growth in the region.

The plans take a change in paradigm into account: the convergence of the region is planned to be based on creating and strengthening the foundations of a competitive economy.

If the political intention will back these efforts, it will be possible to stop the process of the region of Northern Hungary drifting towards the periphery that has been going on for two decades now, and there will be hope to establish a new expansion path.

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