MINISTRY
FOR NATIONAL ECONOMY

The macro-economic effects of EU funding of the 2007-2013 operative programmes

In the EU development period 2007-2013, a massive amount of funding was utilized in the domestic economy within the framework of the EU's cohesion policy, which – due to its significant weight in comparison to the entire national economy -- has had a major impact on the development of Hungary's economy and enterprises. The following presentation of various effects is based on the conclusions of *Hétfa* Research Institute and those of a related study[1]. The impacts assessed by the paper are positive as a whole: direct demand-side effects in the macro-economy temporarily boosted economic growth, while supply-side effects led to the medium-term improvement of the return on investments and the long-term increase of production efficiency across the entire economy.

Modelling of the economic effects of funding

Supported by relevant international research in this field, Hétfa Research Institute compiled and analysed economic policy priority areas, deployed instruments and modes of action within a single system enabling macro-economic modelling. The methodology applied to the analysis assesses the compound effect of development policy interventions used in operative programmes through the adoption of a multi-sectoral CGE model. The model separately displays economic effects by sectors (1: demand-side effects), and it shows the impact on the total productivity of production capacities and multiplier effects through higher demand (2: demand-side effects) mainly for investment and production assets due to the disbursement of development funding. This paper presents below the effects of funding through results of the CGE model and key macro-economic parameters.

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[1] *Balázs G. et. al. (2015): Az EU-források gazdaságfejlesztési és növekedési hatásai*

**Gross effects of EU funds utilization in Hungarian economy**

	2009	2010	2011	2012	2013	2014
GDP (%)	0,32	0,58	0,85	1,19	1,05	1,95
Employment (K)	20,7	30,4	39,1	46,0	38,1	81,7
low-level skilled	14,8	21,5	28,4	32,1	24,8	64,6
high-level skilled	5,9	8,9	10,7	13,9	13,3	17,1
Consumption (%)	0,35	0,50	0,64	0,75	0,61	1,48
Export (%)	-1,48	-1,88	-2,13	-1,77	-0,41	-3,09
Import (%)	0,68	1,16	1,78	2,48	2,27	3,92
Real exchange rate (%)	-0,56	-0,84	-1,09	-1,19	-0,94	-2,44
Derived real wages (%)	0,32	0,51	0,75	0,77	0,97	2,11
Unemployment rate (percentage point)	-0,5	-0,7	-0,9	-1,0	-0,9	-1,8
low-level skilled labour force (percentage point)	-0,8	-1,2	-1,5	-1,7	-1,3	-3,5
high-level skilled labour force (percentage point)	-0,2	-0,3	-0,4	-0,5	-0,5	-0,7
Primary effect on the balance of national budget in percentage of GDP (percentage point)	0,48	0,35	-0,23	-0,12	1,95	-0,93
Gross operating surplus (%)	0,50	0,77	1,00	1,29	1,09	2,30
Labour productivity (%)	-0,25	-0,25	-0,21	-0,08	0,02	-0,19
Growth in R+D activities (percentage point)	-1,29	0,49	0,45	1,85	5,25	1,48
Additional information:						
EU financial assistance in percentage of GDP	1,3	2,0	2,8	3,1	2,2	5,4
Investments at the level of national economy (%)	6,2	9,0	13,7	17,4	9,7	29,9
Purchases of government (%)	0,8	1,4	2,0	1,7	2,3	3,6

Source: HÉTFA

Summing up effects on the economic growth path, one can come to the conclusion that the utilization of funds has had a positive impact on the economy, boosting GDP and employment. In comparison to the total amount of development policy funds, the proportionate effect is below the funding-to-GDP ratio, due to a large replacement effect, which the above chart aptly demonstrates. In the model, the amounts of investment and government purchases are entirely exogenous variables; therefore the model cannot explicitly show potential replacement effects. Household consumption shows direct correlation to changes in GDP, albeit its growth remained below the GDP growth line.

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Trendline of real GDP with utilization of aids and without aids – based on model simulation
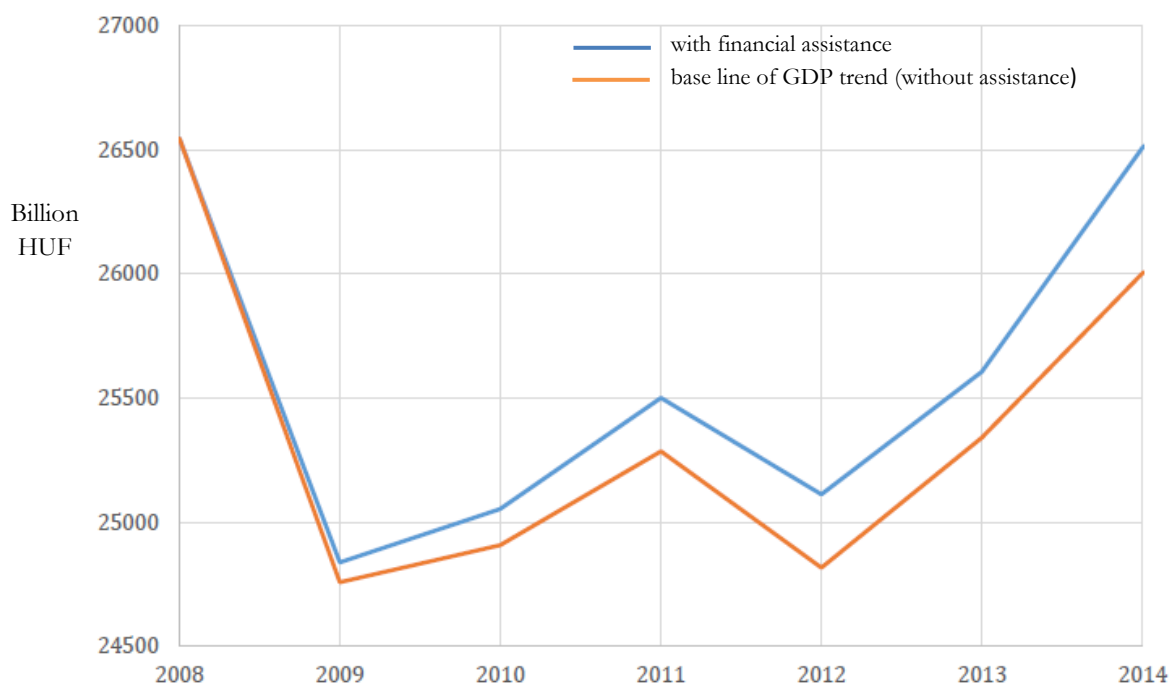
Source: HÉTFA

The largest extra demand and subsequent largest effect generated by EU funding appears to have been within the construction sector. Output also increased more compared to the base path in the R&D&I, tourism and communal services sectors, in every case with direct demand-side or supply-side effects. In utility services, supply also rose thanks to the implementation of development projects, and that has fuelling output. Positive effects can also be observed with regard to the chemical industry and the financial services sectors, among sectors left uninfluenced by direct demand-side or supply-side effects. As far as other sectors are concerned, output slightly decreased compared to the base path.

Modelling provides an opportunity for separating demand-side and supply-side effects (contra-factual simulations) and a subsequent case-by-case analysis.

Calculated demand-side effects and supply-side effects in modelling

|	2009	2010	2011	2012	2013	2014
GDP (%)	0,32	0,58	0,85	1,19	1,05	1,95
demand effects	0,32	0,49	0,62	0,77	0,39	1,06
supply effects	0,00	0,09	0,23	0,43	0,67	0,92
Employment (k)	20,7	30,4	39,1	46,0	38,1	81,7
demand effects	20,7	28,8	35,1	38,8	26,9	67,1
supply effects	0,0	1,7	4,1	7,6	11,6	15,6
Employment by low-level skilled labour force (K)	14,8	21,5	28,4	32,1	24,8	64,6
demand effects	14,8	20,5	25,8	27,6	17,3	53,5
supply effects	0,0	1,1	2,7	4,6	7,6	11,5
Employment by high-level skilled labour force (K)	5,9	8,9	10,7	13,9	13,3	17,1
demand effects	5,9	8,3	9,3	11,2	9,6	13,6
supply effects	0,0	0,7	1,4	2,9	4,0	4,1
Export (%)	-1,48	-1,88	-2,13	-1,77	-0,41	-3,09
demand effects	-1,48	-2,19	-2,81	-3,02	-2,44	-5,91
supply effects	0,00	0,29	0,68	1,26	2,05	2,92
Import (%)	0,68	1,16	1,78	2,48	2,27	3,92
demand effects	0,68	0,98	1,32	1,63	0,89	1,85
supply effects	0,00	0,19	0,48	0,88	1,42	2,19
Real exchange rate (%)	-0,56	-0,84	-1,09	-1,19	-0,94	-2,44
demand effects	-0,56	-0,84	-1,07	-1,16	-0,88	-2,25
supply effects	0,00	-0,01	-0,03	-0,05	-0,09	-0,25
Derived commodity wages (%)	0,32	0,51	0,75	0,77	0,97	2,11
demand effects	0,32	0,48	0,65	0,61	0,69	1,65
supply effects	0,00	0,04	0,10	0,15	0,28	0,47
Unemployment rate (percentage point)	-0,5	-0,7	-0,9	-1,0	-0,9	-1,8
demand effects	-0,5	-0,6	-0,8	-0,9	-0,6	-1,5
supply effects	0,0	0,0	-0,1	-0,2	-0,3	-0,4
Unemployment rate- low-level skilled labour force (percentage point)	-0,8	-1,2	-1,5	-1,7	-1,3	-3,5
demand effects	-0,8	-1,1	-1,4	-1,5	-0,9	-2,9
supply effects	0,0	-0,1	-0,1	-0,3	-0,4	-0,6
Unemployment rate - high-level skilled labour force (percentage point)	-0,2	-0,3	-0,4	-0,5	-0,5	-0,7
demand effects	-0,2	-0,3	-0,4	-0,4	-0,4	-0,5
supply effects	0,0	0,0	-0,1	-0,1	-0,2	-0,2
Primary effect on national budget (percentage point)	0,48	0,35	-0,23	-0,12	1,95	-0,93
demand effects	0,48	0,32	-0,32	-0,28	1,71	-1,27
supply effects	0,00	0,04	0,09	0,17	0,26	0,34
Gross operating surplus (%)	0,50	0,77	1,00	1,29	1,09	2,30
demand effects	0,50	0,68	0,78	0,89	0,46	1,45
supply effects	0,00	0,08	0,016	0,29	0,47	0,42

Source: HÉTFA

Practical answers on the effects of the utilization of EU funding

Finally, we draw final conclusions on certain practical questions with regard to the impact of funding on economic growth.

1. Economic development
2. Education and investments in human infrastructure
3. Employment
   Social economy,
   Civil society,
   Social subsystems and infrastructures
4. Public health
5. Administration and government
6. Transport
7. Energy efficiency
8. Protection of the environment
   Communal infrastructures;
   Local-based development;

Scope of the targeted aids relative to utilized assistances in Operative Programs (until 2014)
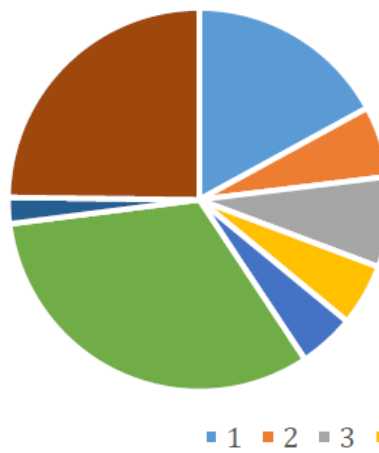
Gross effects of targeted aids relative to macro-economic effects of Operative Programs

■ 1 ■ 2 ■ 3 ■ 4 ■ 5 ■ 6 ■ 7 ■ 8

Source: HÉTFA

Gross effects of allocated aids by development policy (relative to nominal GDP in B Ft-s)

1. Economic development
2. Education and investments in human infrastructure
3. Employment
   Social economy,
   Civil society,
   Social subsystems and infrastructures
4. Public health
5. Administration and government
6. Transport
7. Energy efficiency
8. Protection of the environment
   Communal infrastructures;
   Local-based development;

■ 1 ■ 2 ■ 3 ■ 4 ■ 5 ■ 6 ■ 7 ■ 8
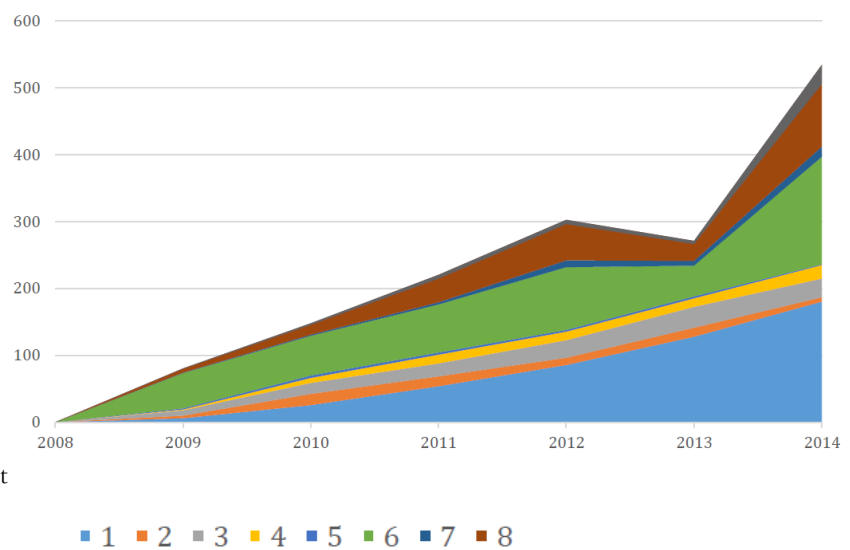
(*Source: HÉTFA)*

Gross contribution of allocated aids by development policy at the level of nominal GDP

1. Base line of GDP trend
2. Economic development
3. Education and investments in human infrastructure
4. Employment
   Social economy,
   Civil society,
   Social subsystems and infrastructures
5. Public health
6. Administration and government
7. Transport
8. Protection of the environment
   Communal infrastructures;
   Local-based development;
9. Energy efficiency
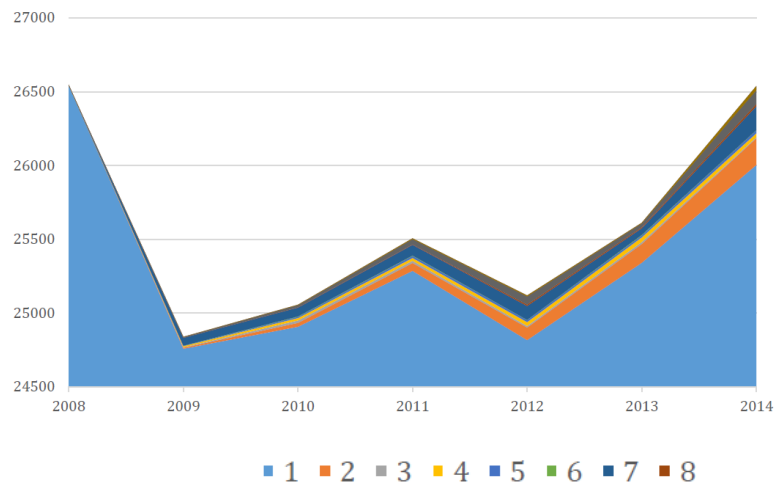
Source: HÉTFA

What were the macro-economic effects of development policy interventions?

Effects calculated on the basis of modelling show an overall positive impact on production within the national economy. Among macro-economic effects, those on the supply-side have boosted the long-term return-on-investment. The model's time horizon covers a period until the year 2014.

How did development policy interventions influence GDP growth and the macro-economic indicators of investment, exports and the fiscal balance?

The institutional system responsible for allocating development funding had disbursed a vast amount of funds during the EU programming period. In the observed time horizon, funding generated discernible demand for suppliers and service providers involved in investment projects. According to the model of *Hétfa*, GDP gained 0.3-2 percent compared to a theoretical basic path. The size and timing of effects show a close correlation with the timeline of disbursements. The model also reveals that demand-side changes adversely affected export competitiveness but it

does not signal any changes – in terms of real economic processes -- in exchange rates and the respective foreign trade position.

How did funds influence corporate competitiveness in terms of productivity, corporate investment and profitability?

Funding has had multiple effects on enterprises. Higher volumes of investment and production have generated significant extra demand – mainly for the construction sector – which led to massive revenues at related suppliers and boosted hiring, especially with regard to low-skilled jobs. However, insufficient technology investment has resulted in smaller output growth and declining work productivity. Supply-side effects, as it has already been mentioned, had a delayed effect on corporate economic indicators. Calculations show that corporate turnover has increased by 1 to 2 percent within the national economy, thanks to development policy incentives. Taking into account the effect of the accumulation of capital, corporate turnover and gross capital formation data, return on invested capital rose, albeit slightly (by 0.2-0.001 percent).

The following has to be noted with regard to the results of modelling and the positive results of economic policy. The model does not show the economic impact of the crisis of 2007-2009, negative outcomes from the financial system and the social "costs" of interventions. The current, relatively robust economic expansion and GDP growth confirms an ongoing effect of supply-side effects.