

Competitiveness and Technological Readiness of Hungary in the Light of Foreign Direct Investment⁴

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ABSTRACT The expansion of the single market in the European Union enabled free(er) movement of capital, goods, services and labour. Since the 1990's the increasing economic opening, the globalisation and the European integration have promoted the economic transformation, to which a significant rate of capital was necessary. To cover that capital requirement, foreign resources have been resorted to, Hungary, together with other countries, became a capital importer country. On the basis of the above, the purpose of the study is the survey of the competitiveness, technological readiness and the foreign direct investment interrelation.

KEYWORDS competitiveness, foreign direct investment, technological readiness

Introduction

One of the most significant fields of the increasingly freer and freer international capital movement is the foreign capital investment, which means that the capital is invested into the economy of another country in the form of such enterprises, which are managed or supervised by the equity holders (and their trustees) (Szentes 2005).

The accelerating privatisation wave along with the factors to facilitate capital import contributed to the increase in the rate of the foreign-owned companies. From the viewpoint of the world economy, the international movement of the direct investment capital has integral effects as it typically moves from capital-supplied countries to countries with capital scarcity. Its significance and features were recognized by Kaname Akamatsu as early as in the 1930's and then published the 'Flying Geese Model', his study was published in English as well in 1962 (Akamatsu 1962). According to the model the developed countries play an essential role in the closing up of the developing countries as the previous ones are followed by

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the developing ones in V-formation. In this process, the trade and foreign direct investments have significant impacts (Kojima 2000).

The products of the developing countries appear on the markets of the developed countries as well, where they generate competitive situation, as a result, it eventuates increase in the efficiency and productivity of the developed countries, which leads to the outflows of the new technology that appears on the market of the developing country (Artner 2013). When taking the working capital flow into consideration the intangible capital must be taken into account as well, which means either the flow of management knowledge or the flow of know-how (Magas 2005).

Definitions of the competitiveness of nations

The Institute of Management Development (IMD) gives two definitions to define the competitiveness of nations. According to the first condensed one „Competitiveness analyses how a nation manages the totality of its resources and competencies to increase the prosperity of its people” (IMD 2014 p. 502). According to the wider, academic definition ‘A field of Economic knowledge, which analyses the facts and policies that shape the ability of a nation to create and maintain an environment that sustains more value creation for its enterprises and more prosperity for its people’ (IMD 2014 p. 502). The IMD draws up the ten golden rules of competitiveness every year, the fifth of the golden rules in the report of 2005 says, ‘Develop aggressiveness on the international markets as well as attractiveness for foreign direct investment’ (IMD 2005). By comparison, the stimulation of foreign capital investments was omitted from the golden rules in 2014. An important field can be found in the 2014 yearbook ‘Support medium sized enterprises, with home grown technology and export orientation’ (IMD 2014). In the light of this concept medium sized enterprises and home grown technology come to the front instead of foreign capital.

The definition of competitiveness given by the World Economic Forum (2014) is broadly analogous to the previous ones, in their interpretation competitiveness is defined ‘as the set of institutions, policies, and factors that determine the level of productivity of a country. The level of productivity, in turn, sets the level of prosperity that can be reached by an economy. The productivity level also determines the rates of return obtained by investments in an economy, which in turn are the fundamental drivers of its growth rates. In other words, a more competitive economy is one that is likely to grow faster over time.’

According to the European Commission (2000) ‘an economy is competitive if its population can enjoy high and raising standards of living and high rates of employment on a sustainable basis. More precisely, the level of economic activity should not cause an unsustainable external balance of the economy nor should it compromise the welfare of future generations.’

Porter's definition (2005) is the following: 'competitiveness is defined by the productivity with which a nation utilizes its human, capital and natural resources. A country's standard of living is determined by the productivity of its economy, which is measured by the value of goods and services produced per unit of its resources. Productivity depends both on the value of a nation's products and services – measured by the prices they can command in open markets – and by the efficiency with which they can be produced. Productivity is also dependent on the ability of an economy to mobilize its available human resources.'

Methodology, data sources, objectives

In 1979 the World Economic Forum published its Global Competitiveness Report for the first time, which analyzes and presents the competitiveness of the countries through 12 pillars. After the aggregation of the indicators of the 12 pillars, a composite indicator comes into being called Global Competitiveness Index, on the basis of which the countries are ranked. The resource of data used to the analysis consists of the statistics data provided by different organizations with special reference to the World Bank, the International Monetary Fund (IMF), the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the World Health Organization (WHO). In addition to these, the WEF, in the form of annual Executive Opinion Survey, collects further data and build them into the Global Competitiveness Index. In 2014 the Report covers 144 countries (WEF 2014).

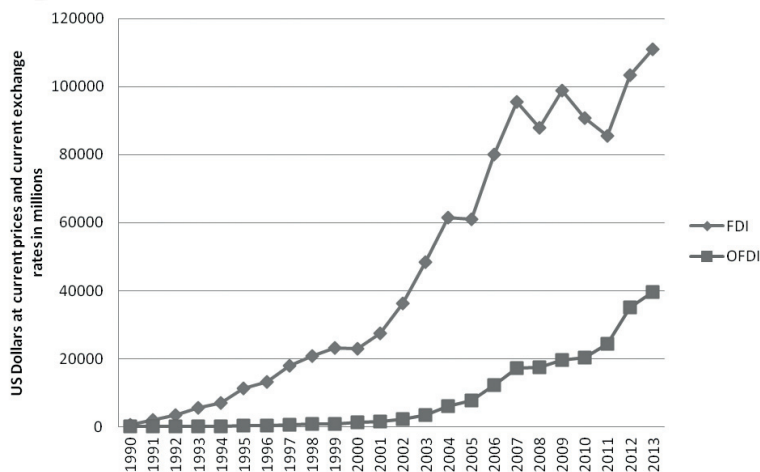
Another well-known researcher of competitiveness, the IMD presents the competitiveness of the nations' economy through four factor groups in their annual report, these four factor groups are the following: Economic Performance, Government Efficiency, Business Efficiency and Infrastructure. These factor groups include 338 criteria in 2014 (333 criteria in 2013), they are standardized and the ranking of the economies is created with reference to each criteria all and singular. The IMD analysis is based on the hard data provided by international organizations (such as OECD, World Bank, UN, WTO, and Partner Institutes worldwide), together with soft data provided by Executive Opinion Survey. The Yearbook assesses the competitiveness of 60 countries in 2014 (IMD 2014).

On the basis of the above, the objective of this study is to analyse the development of technological readiness and competitiveness of Hungary in the light of foreign direct investments. In the analysis, besides the data provided by the two competitiveness researchers above I also used the database of United Nations Conference on Trade and Development (UNCTAD).

Foreign Direct Investment and Export in Hungary

The capital inflow to Hungary began parallel with the democratic transformation, on the other hand, the capital outflow started to increase much later when Hungary joined the European Union, see Figure 1.

Figure 1: The FDI and OFDI in Hungary between 1990 and 2013⁶



Source: own construction based on database of UNCTAD

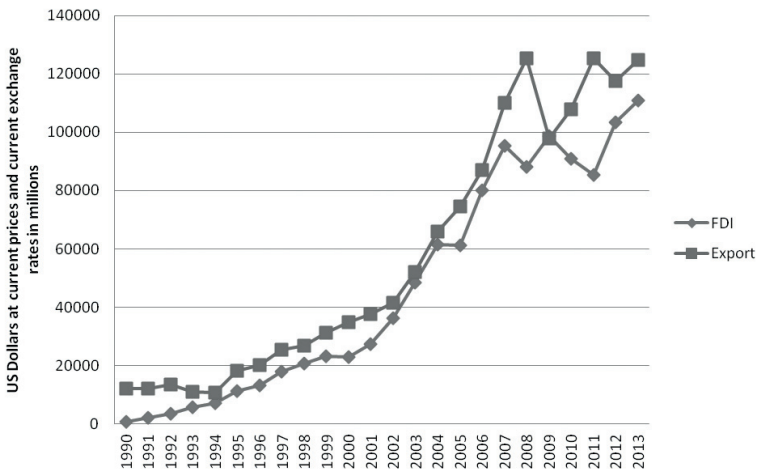
The trends justifies the former theories according to which the smaller countries are more dependent on the capital inflow in their early development and later they orientate themselves to outward investments in greater extent as well (Antalóczy & Élterő 2002).

The foreign-owned companies, established through greenfield investments, generate products almost exclusively for export and they use almost exclusively imported primary commodities and semi-finished products (Csengődi 2012). It follows that the correlation of foreign direct investments is clear; the development of these two variables in time is shown in *Figure 2*. After joining the European Union the resource of the further export growth was the increasing capital inflow, however, it was not the Hungarian companies, which took the advantage of the enormous export market, but the multi and transnational companies functioning in Hungary extended the export of products and services (Pogátsa 2009). It refers to the dependence of Hungary, that is, the integration

6 FDI – (Inward) Foreign Direct Investment, OFDI – Outward Foreign Direct Investment, both are „Stock”

elevated the level of interdependence (Palánkai 2004), as between the growing export and import is the added value provided by the domestic labour, a strong dependence on foreign capital developed on the labour market. The inflationary effects of the employment by the transnational companies shall be mentioned. In accordance with the Balassa-Samuelson effect the increase of the employees' wage at transnational companies also involves the growth of the productivity in the developing countries. Hence, the domestic companies are forced to increase their employees' wages, but there is not growth of productivity behind it. After all, it has inflation effects.

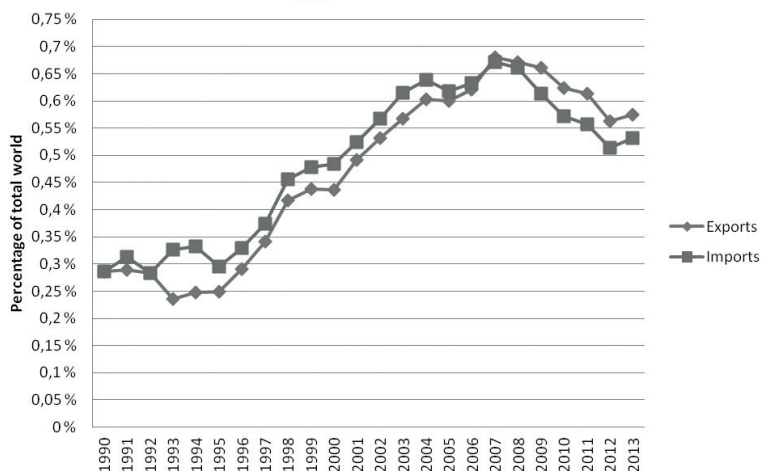
Figure 2: The development of FDI and export in Hungary between 1990 and 2013



Source: own construction based on database of UNCTAD

The export of products and services has increased significantly along with the FDI Stock since 1990; these variables are closely related to each other (the „r” correlation coefficient is 0.9796). However, the world export share did not begin to increase in 1990 but only from 1995, it is presented in *Figure 3*.

The fundamental sign of growth in competitiveness by foreign direct investments is the world export share of a country (Csáki 2004). It is important because Hungary, since the democratic transformation, have pursued an economic policy attracting foreign capital; thereby they wished to improve the competitiveness on the world market and in the world economy. However, it can not be operated exclusively by attracting capital as in case its implementation is not appropriate, the opportunity to increase competitiveness gives a risk of developing an asymmetrically dependent relation.

Figure 3: Shares of merchandise exports and imports in Hungary

Source: own construction based on database of UNCTAD

On the basis of the previously referred Csengődy-study it shall be emphasized that the world market shares of Hungarian export and import are also closely related to each other (the „r” correlation coefficient is 0.97).

The relation between foreign direct investment and the stage of development

The World Economic Forum classifies the countries on the basis of their stage of development. The five stages are the following:

- 1 - Factor driven,
- Transition 1-2,
- 2 - Efficiency driven,
- Transition 2-3,
- 3 - Innovation driven.

Among the Member States of the European Union only the most developed three stages can be found, Hungary is a transitional country between stages 2 and 3 at present; it tends to move from efficiency driven to innovation driven. The stages of development are shown in *Table 1*, for the classification of each country see *Table 2*.

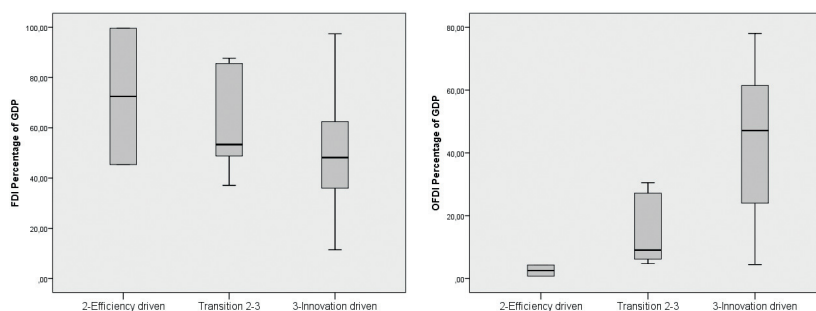
**Table 1: Stages of Development
in the Member States of the European Union**

Stage of development	Frequency	Percent	Cumulative Percent
2 – Efficiency driven	2	7,1 %	7,1 %
Transition 2-3	7	25,0 %	32,1 %
3 – Innovation driven	19	67,9 %	100,0 %
Total	28	100,0 %	

Source: own calculation based on WEF (2014)

Analysing the inward and outward FDI as percentage of GDP, it can be stated that in the Innovation driven countries the GDP-ratoned FDI inflow is at lower level than in the other countries, at the same time the capital outflow is the highest in these countries, it is supported by Figure 4.

**Figure 4: GDP- Rationed Inward and Outward Foreign Direct Investment
in the Member States of the European Union (2013)⁷**



Source: own construction based on WEF (2014) and database of UNCTAD

As it can be seen the outward capital stock is quite low in the Efficiency driven countries, but it shall be added that only Romania and Bulgaria belongs to this category among the EU Member States. In 2013 Greece reached the lowest value of Inward FDI per capita (2.493 USD at current prices and exchange rates), as for the outward FDI Romania is at the lowest point (68 USD), but Bulgaria, Latvia, Lithuania and Slovakia have less outward FDI than the average.

In 2013 the value of the Inward Foreign Direct Investment per capita was 11.152 USD in Hungary, at the same time the value of the Outward FDI was 3.979 USD. This value is the highest among the Visegrad Four⁸ it is almost twice as

7 Excluded (because of extreme data): Belgium, Ireland, Luxembourg, Malta and the Netherlands

8 Visegrad Four: Czech Republic, Hungary, Poland, Slovak Republic

much as in the Czech Republic. As for the Inward FDI, only the Czech Republic preceded Hungary with higher value among the primary competitors (Visegrad Four and Romania).

Table 2: Competitiveness, Inward & Outward FDI and Technological Readiness in EU-28⁹

Country	Stage of development	FDI / GDP	OFDI / GDP	WEF rank (out of 144)	IMD rank (out of 60)	Technological readiness (score 1-7)	WEF score (1-7)	IMD score (0-100)
Austria	3 - Innovation driven	44,18	57,3	21	22	5,74	5,16	73,699
Belgium	3 - Innovation driven	182,39	199,16	18	28	5,78	5,18	66,595
Bulgaria	2 - Efficiency driven	99,58	4,31	54	56	4,73	4,37	45,784
Croatia	Transition 2-3	56,08	7,53	77	59	4,56	4,13	38,974
Cyprus	3 - Innovation driven	97,37	38,15	58	-	4,56	4,31	-
Czech Republic	3 - Innovation driven	68,59	10,79	37	33	4,96	4,53	62,213
Denmark	3 - Innovation driven	48,15	77,56	13	9	6,10	5,29	84,04
Estonia	Transition 2-3	87,67	27,18	29	30	5,26	4,71	64,383
Finland	3 - Innovation driven	39,41	63,16	4	18	5,97	5,50	78,159
France	3 - Innovation driven	39,46	59,74	23	27	5,77	5,08	67,941
Germany	3 - Innovation driven	23,46	47,12	5	6	5,81	5,49	85,782
Greece	3 - Innovation driven	11,46	19,14	81	57	4,79	4,04	42,244
Hungary	Transition 2-3	85,56	30,53	60	48	4,43	4,28	52,505
Ireland	3 - Innovation driven	172,3	229,4	25	15	5,89	4,98	80,36
Italy	3 - Innovation driven	19,5	28,9	49	46	4,82	4,42	52,871
Latvia	Transition 2-3	50,58	4,74	42	35	5,12	4,50	61,848
Lithuania	Transition 2-3	37,1	6,21	41	34	5,37	4,51	62,014
Luxembourg	3 - Innovation driven	236,47	303,75	19	11	6,36	5,17	82,164
Malta	3 - Innovation driven	159,54	16,33	47	-	5,58	4,45	-
Netherlands	3 - Innovation driven	83,95	134,27	8	14	6,00	5,45	81,144
Poland	Transition 2-3	48,79	10,64	43	36	4,47	4,48	61,767
Portugal	3 - Innovation driven	58,46	37,26	36	43	5,42	4,54	54,403
Romania	2 - Efficiency driven	45,37	0,79	59	47	4,49	4,30	52,841
Slovak Republic	3 - Innovation driven	61,45	4,48	75	45	4,37	4,15	53,302
Slovenia	3 - Innovation driven	32,53	16,52	70	55	5,05	4,22	46,245
Spain	3 - Innovation driven	52,77	47,41	35	39	5,40	4,55	57,913
Sweden	3 - Innovation driven	67,67	78,03	10	5	6,19	5,41	85,833
United Kingdom	3 - Innovation driven	63,37	74,4	9	16	6,28	5,41	79,814

Source: own calculation based on WEF (2014), IMD (2014) and database of UNCTAD

9 The higher data (Inward or Outward) have been shaded in grey.

As shown above in Table 2, the amount of Inward FDI precedes the Outward FDI only in Spain and in Portugal among the EU-15 countries. There is not such a single new-joiner among the countries, where the OFDI is higher.

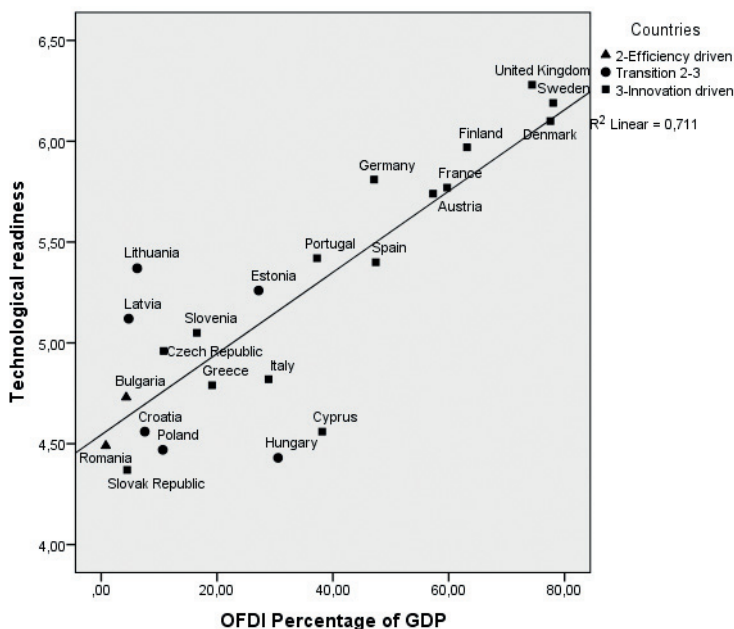
The effects of FDI on the technological readiness and the competitiveness

For the East-Central European countries transforming from planned economy to market economy the engine of modernization along with its technological development was the Working Capital Investment. The initiatives of foreign investors and choosing their location played an important part in it (Csáki 2004). The role of foreign capital in the modernization was essential in Hungary as well (Gillingham 2003).

From the analysis of Technological Readiness in the annual report of the World Economic Forum (2014-2015) it can be seen that Hungary was at the 50th place of the 144 countries, this pillar is a composite indicator which includes the following indexes: Availability of latest technologies, Firm-level technology absorption, FDI and technology transfer, Individuals using Internet, Fixed broadband Internet subscriptions, International Internet bandwidth, Mobile broadband subscriptions. Among these indexes Hungary received the worst result (75th) in the field of International Internet bandwidth (24.7 kb/s per user); the best position (19th) was achieved in the FDI and Technology Transfer index. The latter one is a soft indicator, generated from the Executive Opinion Survey. The question in the Survey is the following: To what extent does foreign direct investment (FDI) bring new technology into your country? [1 = not at all; 7 = to a great extent—FDI is a key source of new technology]. After the evaluation of this question the value of index in Hungary and in Slovakia was 5.1, the highest value among the Visegrad Four. It is not surprising that the role of GDP-ratoned Inward Foreign Direct Investment in modernization in Ireland had the highest value, 6.4.

As the correlation analysis is very sensitive to excessive data (Sajtos & Mitev 2007), so they had been filtered and omitted from the analysis. The correlation coefficient between the Outward FDI Percentage of GDP and the Technological Readiness is 0.843 (Sig. 0.01), indicating a strong, positive relation. It can be seen in *Figure 5* that the analysis gave rising trendline results between the two latter variables, implying that the higher the value of the Technological readiness in the country is, the higher the amount of Outward Foreign Direct Investment is. Hungary, like Cyprus, in spite of the low Technological readiness from GDP-ratoned point of view has high Outward Foreign Direct Investment, in case of Lithuania and Latvia it is just conversely.

Figure 5: Values of Technological readiness and OFDI percentage of GDP in EU-28¹⁰



Source: own construction based on WEF (2014) and database of UNCTAD

The analysis of the development of the competitiveness shows that in spite of the increasing Inward Foreign Direct Investment Hungary could not improve its competitiveness as it deteriorated its position comparing it to the countries of the region. It suggests that the appearance of transnational companies in itself is not enough to improve national competitiveness.

Table 3: Position of Hungary in the ranking of competitiveness between 2004 and 2014¹¹

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
WEF	39/104	35/117	41/125	47/131	62/134	58/134	52/139	48/142	60/144	63/148	60/144
IMD	42/60	37/60	41/61	35/55	38/55	45/57	42/58	47/59	45/59	50/60	48/60

Source: own construction based on WEF (2014) and IMD (2014)

10 Excluded: Belgium, Ireland, Luxembourg, Malta and the Netherlands

11 Position of Hungary/analysed countries

Summary

The conversion to market economy and joining the European Union allowed freer flow of the working capital, but it led to the development of interdependence. For the capital importer countries, one of the most essential issues is the managing of this kind of dependence, and another question is if the state should improve the ability to raise foreign capital or should they develop the competitiveness of their own, domestic companies on the world market. The inequality and the asymmetry of interdependence are materialized not only in the case if the capital importer does not export capital to the country which invests in their country, but when the capital flow between the two parties becomes disproportionate (Szentes 2005).

Although thanks to the 'flying geese' the productivity and the export of capital importer countries increase but the employment provided by transnational companies has inflation effects, furthermore it affects the foreign currency exchange in the long term as well. The asymmetric interdependence shall be interpreted not only on macro level, but on corporate level too, as the smaller and medium-sized companies take the opportunity of cooperation, which can even be manifested in joining to the supply chain of a transnational company. The development of this interdependence shows a high level risks, as in case of disinvestment of transnational companies the formerly established supply chain loses its most important element, the suppliers are forced to find new opportunities, new scope of activities and this sort of elasticity is not present in these enterprises.

Theoretically, the problem of disinvestment can be solved by the Tobin-tax, so it would cover not only the deals of stocks and shares market or the trade of the derivatives alone. According to the extension protesters, however, levying tax on the working capital would restrict the free movement of capital and the opportunity of free entrepreneurship. The asymmetric situation shall be handled, but the way of treatment shall not be nationalization without compensation, the immediate restore of sovereignty as it confronts the legal concepts and it involves serious retaliation. Basically, the solution can be found in removing the asymmetry and in changing the situation into symmetry (Szentes 2005).

The investing motivation of transnational companies can be influenced by several economic policy incentives (for example tax relief, state aids), but these resources can be used in the development of domestic enterprises as well. Consequently, the optimal solution is to find the balance between the support and expansion of foreign and domestic companies as the Inward Foreign Direct Investment in itself does not guarantee the improvement of the competitiveness.

In the issue of attracting capital the government should decide if the technological readiness and the immaterial capital flow along with the increase of capital import or the improvement of competitiveness of domestic enterprises, the endeavours to expansion will involve long term advantages for the national

economy and the society. Such an R+D and innovation- based economy can be built by the improvement of education (it does not only mean the increase in the expenditure on education), by honouring the knowledge and by reducing the 'brain drain' phenomena, which reduces the asymmetric interdependence and increases the competitiveness of Hungary in the medium and long term.

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