

REPORT

FINANCIAL AND GEOPOLITICAL CHALLENGES

Post-election outlook for the
Hungarian economy 2022-2026



Equilibrium
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TABLE OF CONTENTS

Executive summary	4
1. Introduction	6
2. General presentation of the Hungarian economy	7
3. The international dependence of the economy	12
4. The biggest post-election economic challenges	24
5. Scenarios for reducing energy dependency	31
6. External financing needs for energy diversification	44
7. Conclusions	46
Sources and references	47

EXECUTIVE SUMMARY

01

Hungary is a very open economy, and as consequence, it is vulnerable and highly exposed to external risks. These dependencies can be observed both through real economy channels (ie. large share of foreign capital in GDP) and energy channels (Russian energy imports). On the real economy channels, the Hungarian government – now in power since 2010 – has tried to counterbalance the economy’s dependence on the West by agreeing to large bilateral projects with Russia and China. The most important of these is a nuclear power plant to be built by Rosatom in Paks. Although Hungary, along with Slovakia, was already the most dependent country on Russian energy supplies in the EU, the government has tied itself even more closely to Moscow via long term natural gas contracts. Unfortunately, Hungarian electricity generation, through the Paks nuclear power plant and gas power plants is also dependent on Russia and the situation is not much better for oil imports either.

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Since EU sanctions on Russian oil imports are apparently blocked by the Hungarian government, the country’s heavy dependence on Russian oil now threatens to turn into an EU-level political crisis. Decoupling from Russian oil, and as a consequence Hungarian support for EU-wide sanctions is not possible in the short term, mainly because the Hungarian central budget is in a very weak position. Notably, very extensive external financing would be needed due to large social transfers motivated by the elections in April, and the burden of the most generous utility price cap policy in the EU. EU transfers – on which the country is particularly dependent – are also being called into question due to the EU Commission’s concerns about the state of democracy in Hungary.

03

The state oil company MOL's business model is key in the Hungarian oil embargo veto: MOL has a significant cost advantage over its competitors which builds on Russian oil imports and cheap pipeline transportation. Because MOL's margins raised significantly since the outbreak of the war, it is highly unlikely the Hungarian government will give up on Russian oil. This is true despite the fact that unlike for gas or nuclear fuels, the oil embargo on Russian blends would not endanger the security of supply of the country.

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All in all, about USD 3 billion would be needed in the next 2 years to overcome budget gaps. In a highly unlikely scenario in which the government decides to (partially) decouple itself from Russian energy, the total external financing needs would be as high as USD 18-19 billion. This cannot be covered without external financing and there is a mounting pressure on the government to come to an agreement with the EU on the Rule of Law mechanism. If it fails to do so, it will have scarcely any room to maneuver and the Hungarian leadership might have to consider a bilateral loan from China as well.

1. INTRODUCTION

On April 3, 2022, Fidesz won its fourth consecutive constitutional (two-thirds) majority in parliamentary elections in Hungary. In the run-up to the election, the government successfully increased its popularity through several financial transfers and tax cuts. This process further reinforced the international negative effects on the budget, which were then radically exacerbated by Russian aggression against Ukraine. Significant adjustments are needed in the next one and a half year and several geopolitically relevant questions need to be answered about how the government will finance planned investments and reduce deficits and inflationary pressures. The present study enumerates these.

The current government has continued to make significant efforts to improve relations with the East, primarily with Russia and China, to ease its dependence on the EU and the US. However, the conflict in Ukraine has put the government in a delicate position, where the expectations of NATO and EU countries (i.e. support for sanctions) and previously well-established Russian relations, which created an economically favorable situation but resulted in strong political dependence, must be balanced. As a result, Hungary has become an ideological and economic buffer zone between East and West, where it is crucial which “bloc” can gain more influence. If Hungary takes a more pro-Russian stance in the EU than at present, it could destabilize and significantly isolate the entire EU, further increasing Russian and Chinese exposure.

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The conflict in Ukraine has once again brought to light Europe’s dependence on Russian energy sources. This is especially true in the eastern part of the EU, where Hungary is also located. Hungary has to deal with a number of competitive disadvantages, which it needs to overcome as one of the most dependent European countries on the external environment, which is increasingly unfavorable. In addition, the Hungarian economy only joins world trade “from the bottom”; meaning that there is little domestic value-added within Hungarian exports.

This study consists of five parts. In the first chapter, we present the Hungarian economy based on some general data. In the second chapter, we write about the international dependence position of the Hungarian economy, also covering those bilateral agreement projects with China and Russia which are considered geopolitically significant. In the third chapter, we examine the main economic challenges facing the government after the elections. In the fourth part, we present the main dilemmas and solutions to alleviate Hungary’s energy dependency. Finally, in the last chapter, we estimate Hungary’s need for additional external financing for 2022 and 2023 to reduce energy dependence on Russia.

2. GENERAL PRESENTATION OF THE HUNGARIAN ECONOMY

Hungary is a small economy in the eastern part of Central Europe with a population of 9.7 million. The country has been officially independent since the 19th century but has always been dependent on several major powers. Until the First World War, Hungary had the largest share of the empire’s agricultural production as part of the Austro-Hungarian Monarchy, while developed industrial capacities were concentrated in the western parts of the empire. With the end of the First World War, the Monarchy disintegrated, so the development of independent industrial capacities became the focus of Hungary’s independent economic policy. Due to this, the development of Hungary increased in the years before the Second World War, and after it, even the communist planned economy was able to – at least temporarily – accelerate progress. Due to the fundamental flaws of the communist system and the oil crises of the 1970s, the country became indebted, and the leadership did not want to adjust at the expense of living standards. Support for the system weakened in the late 1980s, along with declining living standards and increasing Western influences on people’s lives, bringing a rapid turn in economic policy to the West. The first freely elected government in 1990 was able to cover the foreign exchange resources needed for debt repayment with the large-scale privatization of state-owned companies. Hungary joined the European Union in 2004, along with 9 other member states. From then on, the primary external financial source of the Hungarian development policy became co-financing by the EU budget, which is still the guiding principle in economic policy.

Hungary currently accounts for 1 percent of EU GDP, which can be interpreted as the size of Nevada or Kansas. To the west, Austria has a population of similar size but is two and a half times larger, while to the east the Romanian economy is about one-third larger.

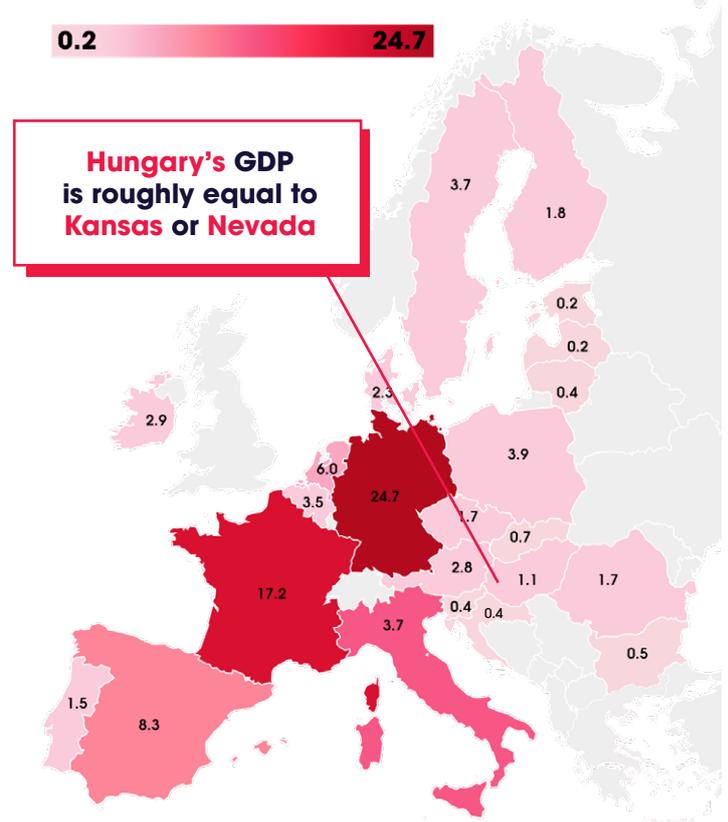


Chart 1: Size of economies in EU27, percentage of total (2021)¹

Hungary’s per capita GDP ranks the country at the back of the EU. The country is even further behind the EU average in terms of per capita consumption data, which is more indicative of living standards. In 2020, Hungary reached 76 percent of the EU’s development in terms of GDP per capita, which is a significant improvement compared to the 30-35 percent level of development typical of the early 1990s. The catching-up was due to three main factors: first, an increase in productivity from the inflow of capital through the opening of markets to the west supported the convergence. Second, transfers from the EU have contributed to the modernization of the economy (primarily industry). Third, the economic policy starting in 2010, supported by favorable external conditions, has been able to pursue an expansionary economic policy

by consolidating the general government balance. The latter relied, on the one hand, on attracting previously underemployed labor into the labor market and, on the other hand, to support catching up with persistently low interest rates. Thus, Hungarian economic policy has set the country on a growth path but, at the same time, we cannot talk about a unique success story: Poland was able to reach the Hungarian level starting from a lower level of development, but Hungary failed to close the development gap with Czechia.

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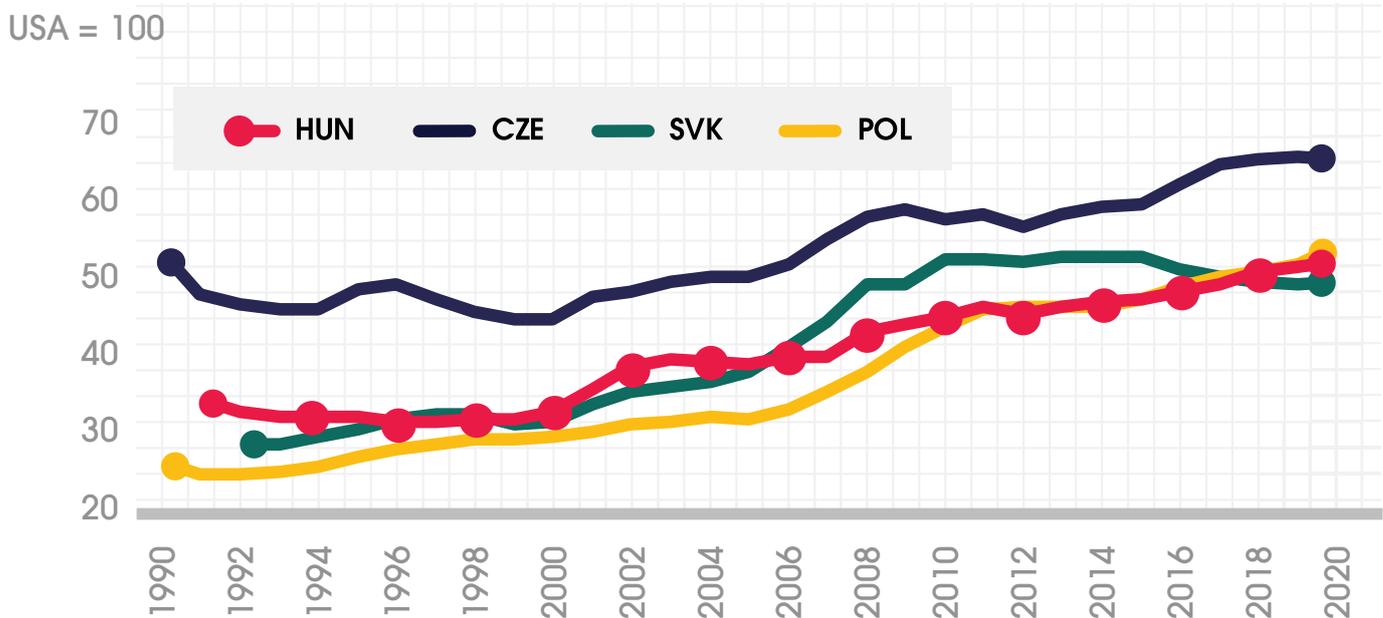


Chart 2: Individual consumption levels versus GDP levels for EU member states²

The expansionary economic policies of the last 12 years have not been accompanied by a convergence of living standards. While 7 member states are behind Hungary in terms of GDP per capita development, in terms of actual individual consumption (AIC) Hungary reaches only 67 percent of the EU average (2021). Only one Member State, Bulgaria, is doing worse. The gap between GDP and consumption is due to both the high share of foreign ownership in the economy (i.e. the gap between GDP and GNI is high)

and the declining share of wages (profits are growing faster in GDP than real wages). The weak currency, the forint, worsens the international purchasing power of households. Hungarian economic policy set a goal in 2010 to reach a higher share of domestic ownership in the economy. If this policy is successful and is followed by a stronger rise in wages (measured in euros), it could close the gap between output and income in Hungary; Chart 3 indicates that Hungary may approach the 45-degree balance.

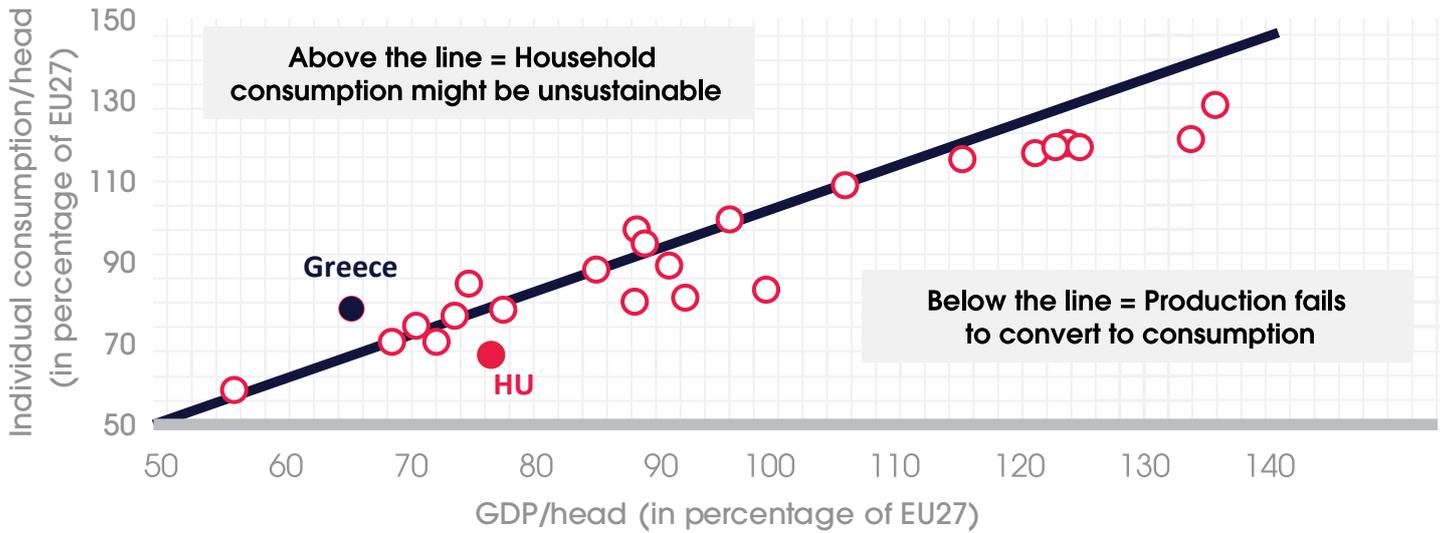


Chart 3: Individual consumption levels versus GDP levels for EU member states³

The standard of living in Hungary is only 25th in the EU. In addition to the low levels of individual consumption, taking into account factors such as access to education or life expectancy as well, the Hungarian ranking remains low. However, the position is somewhat more favorable if we

take into account the inequality figures, which are usually low in Hungary by international comparison. Taking into account the inequality figures too, Hungary’s performance rises to 19th place in the EU.

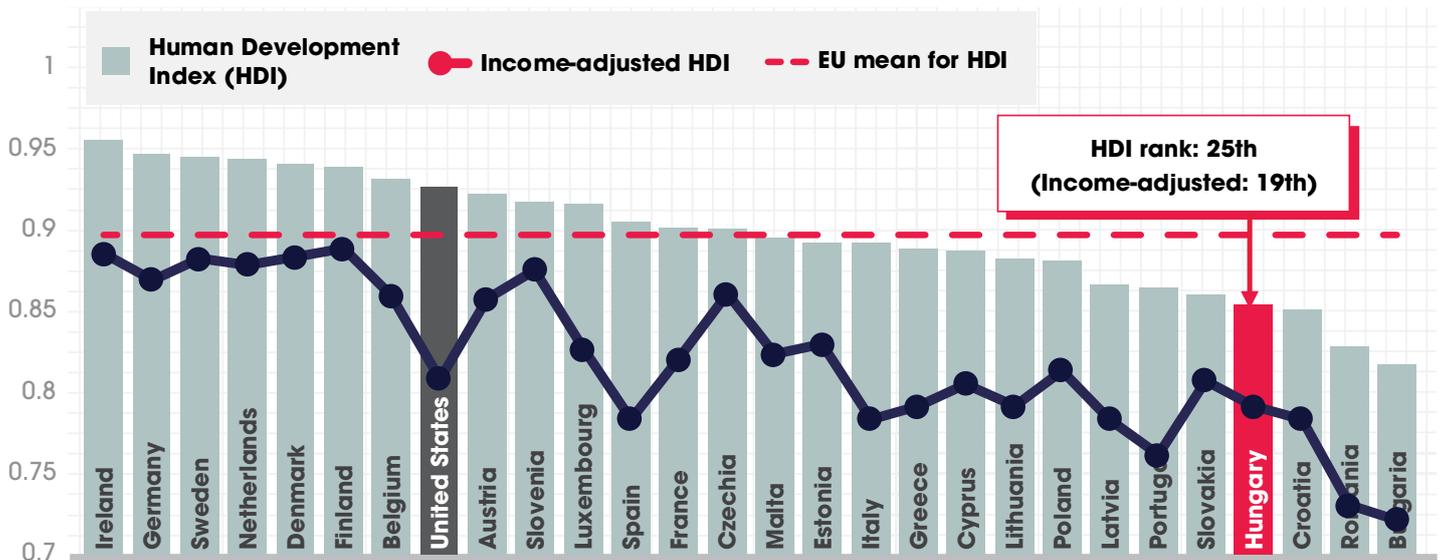


Chart 4: Human Development Index (HDI) in the EU and US (2020)⁴

In Hungary, the role of the state in the economy is strong, while the manufacturing industry occupies a prominent place on the production side of the economy. Compared to the USA, the Hungarian economy relies less on household consumption, and the role of government consumption and government-backed investment is stronger. The state is responsible for a quarter of investments and employment. The foreign trade balance has contributed positively to growth in most years, despite high investment demand for

imports, in which the state is taking part through a dual channel. On the one hand, it provides favorable conditions for companies to establish themselves through the tax system, on the other hand, they are also encouraged to invest and export through direct subsidies. The other favorable condition is the continuous depreciation of the forint since 2013, which in itself has a positive effect on the external balance positions of a country with significant (foreign-owned) export capacities.

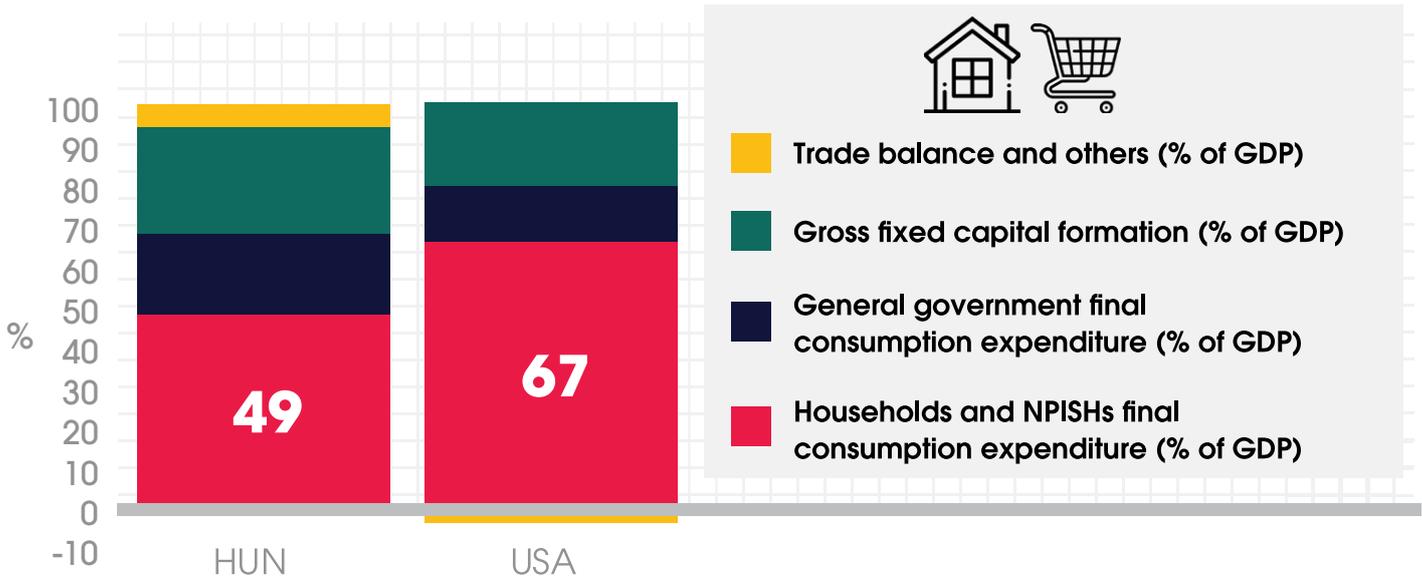


Chart 5: Final use structure of the economy in Hungary and the US (2019)⁵

On the production side of the economy, like in other Central European countries, the manufacturing industry plays a key role, accounting for 21 percent of the gross national value-added (compared with 11 percent in the United States). Despite government incentives for the manufacturing industry, services are ripping out a larger slice of the economy year after year, mainly through the growth of various professional services. The latter sector also has a significant share of foreign ownership. Of the traditional sectors, construction and agriculture are of a similar size with 4-5 percent each. EU subsidies play a significant role in the lives of both: in the case of agriculture, area-based subsidies are the mainstay, while the state is a major customer in the construction sector, investing large amounts of EU funds in building and construction investments. The state also provides significant demand directly to the construction industry through family support schemes, which are mainly realized in residential construction projects.

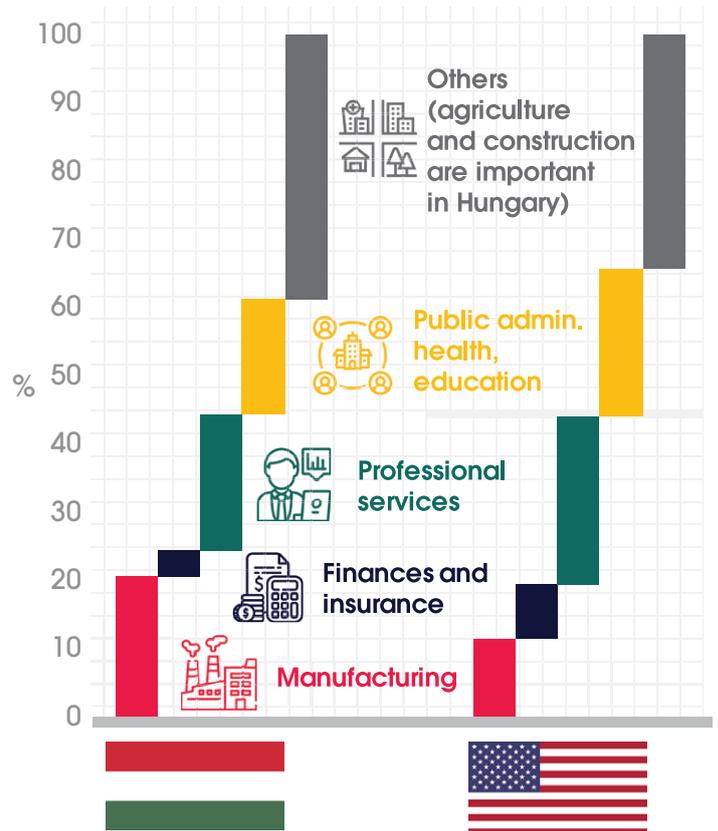


Chart 6: Expenditure structure of the economy in Hungary and the US (2019)⁶

EU and national state aid has favored investment in physical infrastructure. Compared to the US and many western European states, building and construction investment accounted for the largest share of investment growth in Hungary, but investment in machinery was also strongly supported due to the size of the manufacturing (and logistics) sector. Investment in intellectual property rights is low in Hungary and not only compared to the service-dominated USA, but also compared to several regional competitors (Czechia, Estonia).

Thus, Hungary is a catching-up country that envisages a way out of the trap of medium development through a strong state role and increasing the performance of

the manufacturing industry. In the following, we review the extent to which the Hungarian economy depends on external conditions.

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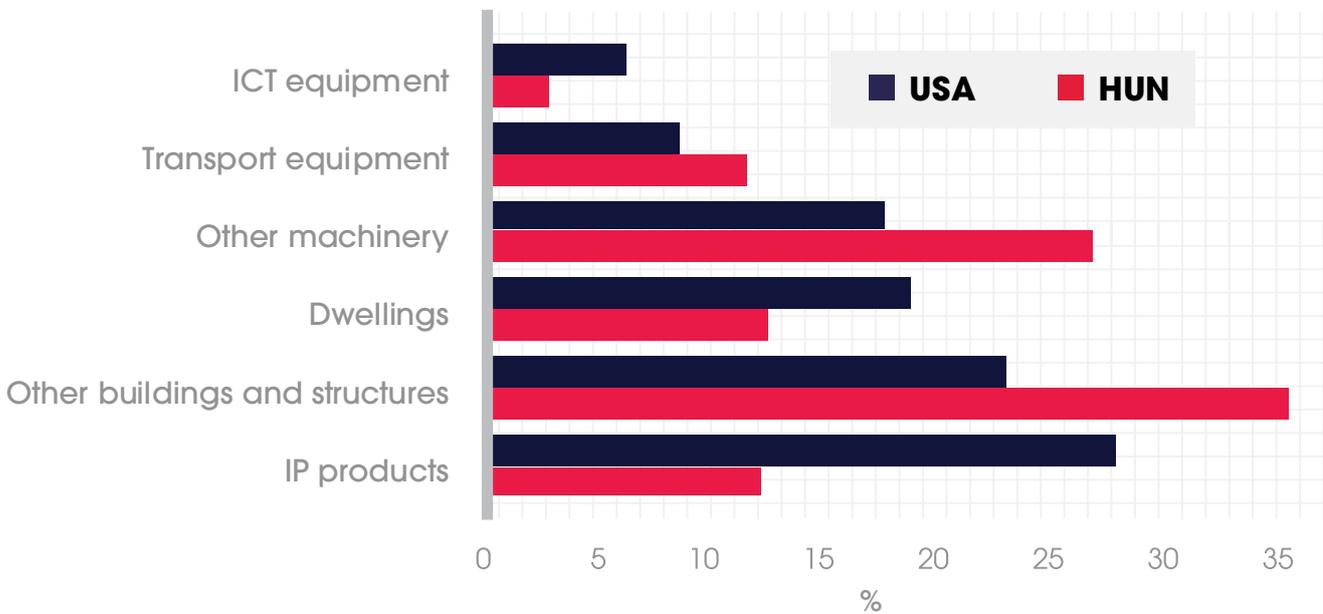


Chart 7: Investment structure of Hungary in comparison to the US (2019)⁷

3. THE INTERNATIONAL DEPENDENCE OF THE ECONOMY

Hungary is one of the most open economies in Europe. The widely used ratio of foreign trade to GDP stood at around 60 percent of the world average in the early 1990s. With the strong and rapid inflow of foreign direct investment, Hungary and the wider region have significantly increased their openness. By 2010, the ratio of imports and exports to GDP was close to 170 percent and has not declined significantly since then.

Hungary is one of the most open economies in Europe.

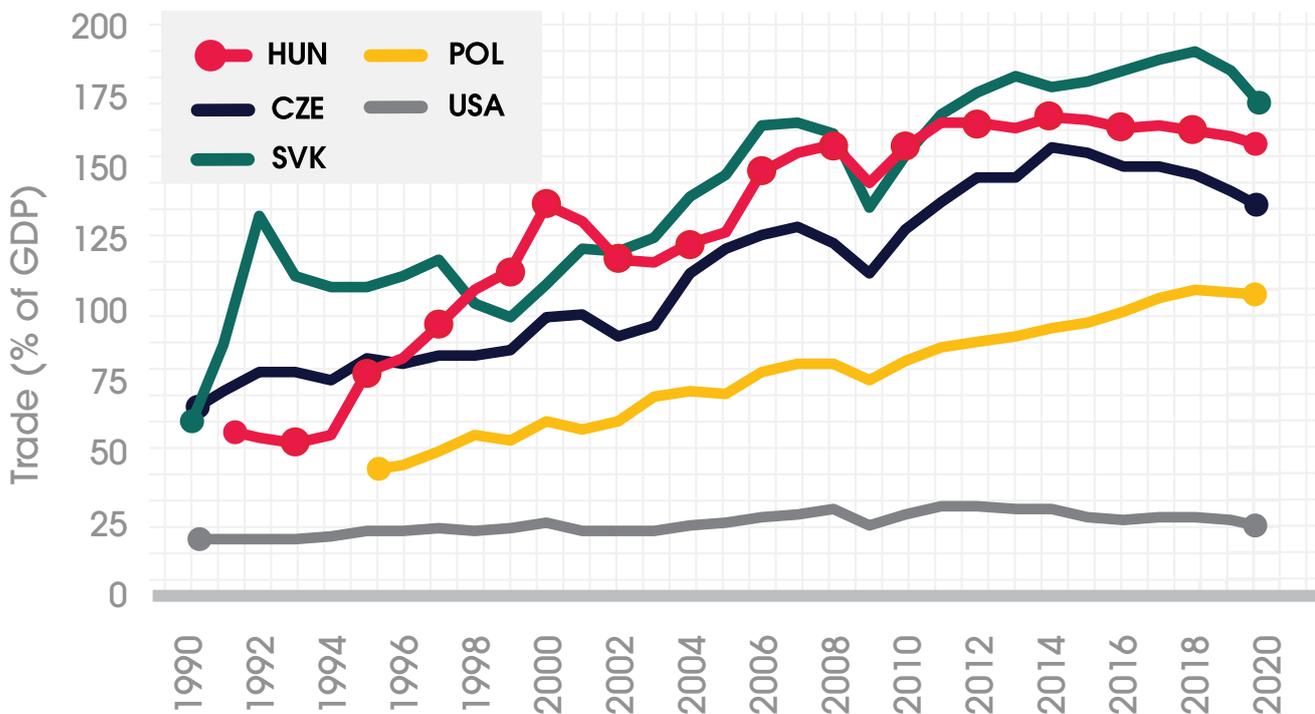


Chart 8: Openness of the economy (export and import to GDP)⁸

A large inflow of FDI contributed significantly to recent years' growth. In Hungary, the stock of foreign direct investment reached only 2 percent of GDP in 1990, while in 2012 the (stock) investments of foreign companies already accounted for 81 percent. Hungary's FDI expansion, like most small countries, has been dynamic, but Hungary's FDI portfolio is not remarkably large. With a current rate of 65 percent, the country is in the middle of the EU country ranking.

Hungary is the second most dependent country in Europe on foreign capital after Ireland.

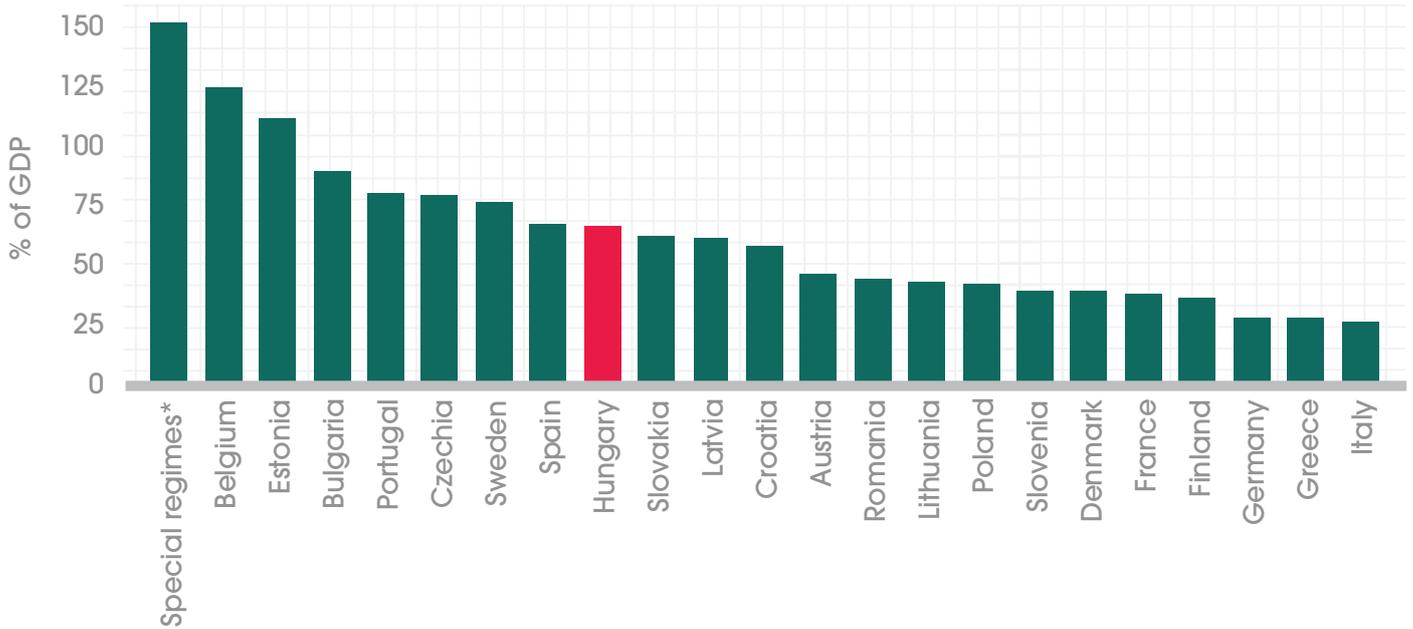


Chart 9: FDI stock / GDP (2020)⁹

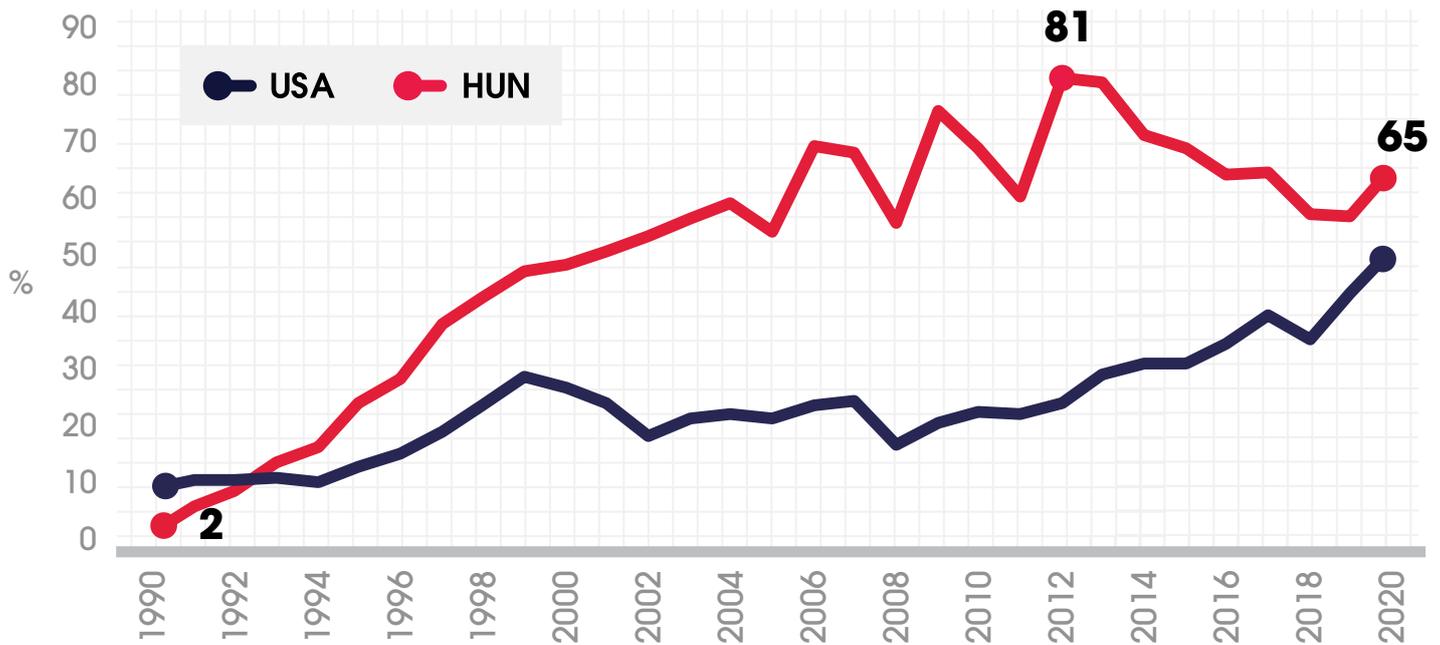


Chart 10: FDI stock / GDP time series¹⁰

Hungary is the second most dependent country in Europe on foreign capital after Ireland. Given that the FDI stock does not always show the dependence of the economy on foreign-owned companies, we also examined an alternative measure. This is because FDI statistics also measure special purpose entities (SPEs) that do not engage in real economic activity. In addition, complicated ownership structures often do not show the real owner of the investment. Recognizing this, the European Statistical Office produces its foreign affiliates statistics (FATS)

every year, where the accounting is made based on the final beneficial owner concept. Based on this, the picture is already changing: compared to the FDI figure (Chart 9), Hungary advances in the European ranks and is the second most dependent on foreign capital in the world after Ireland. The role of US capital is high in Hungary too: it is the fourth most dependent on US capital after Ireland, Luxembourg, and the Netherlands. Russian and Chinese companies do not have a significant market share in any European country, including Hungary.

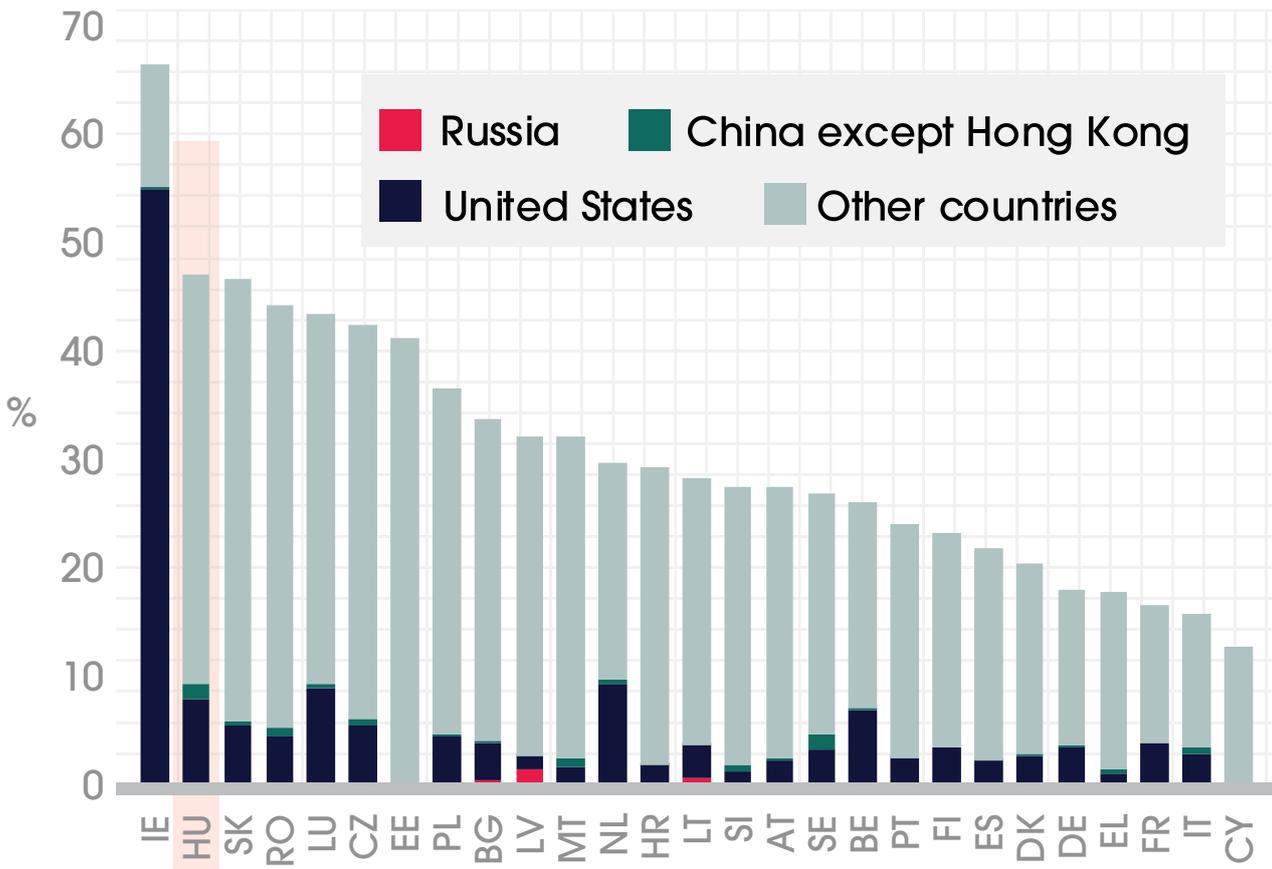


Chart 11: Foreign affiliates statistic: value-added in the percentage of total business economy (2018)¹¹

Within Hungary, the role of German capital is the most significant in the value-added produced by foreigners (38 percent), but the production of American companies is not far behind either (22 percent of the total). German companies are typically active in the manufacturing industry, within which the machinery industry stands out. Of the 5 largest foreign companies in Hungary, 4 are German-owned. Among the German companies, Audi has been present in Hungary since 1996, accounting for about 2 percent of Hungarian GDP.

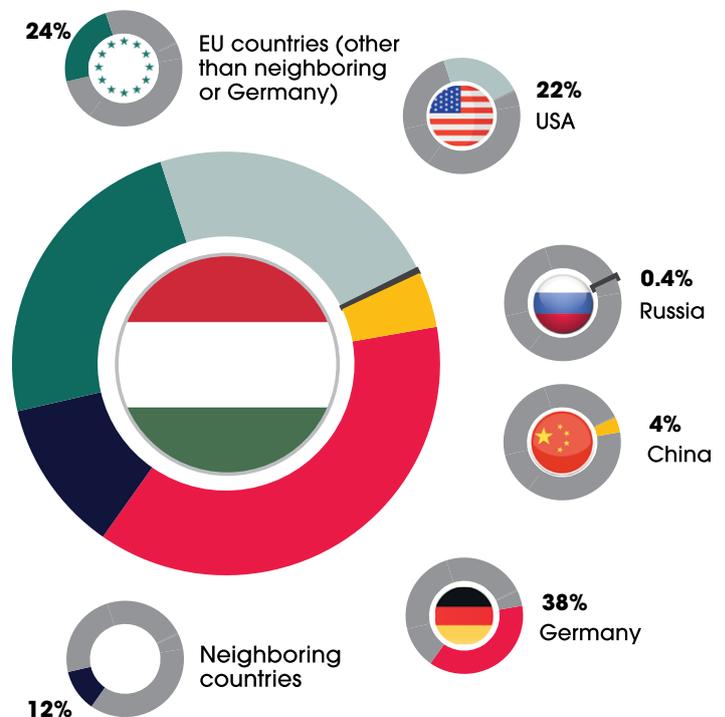


Chart 12: Foreign affiliates by country of final control, based on value-added generated in Hungary (2018)¹²

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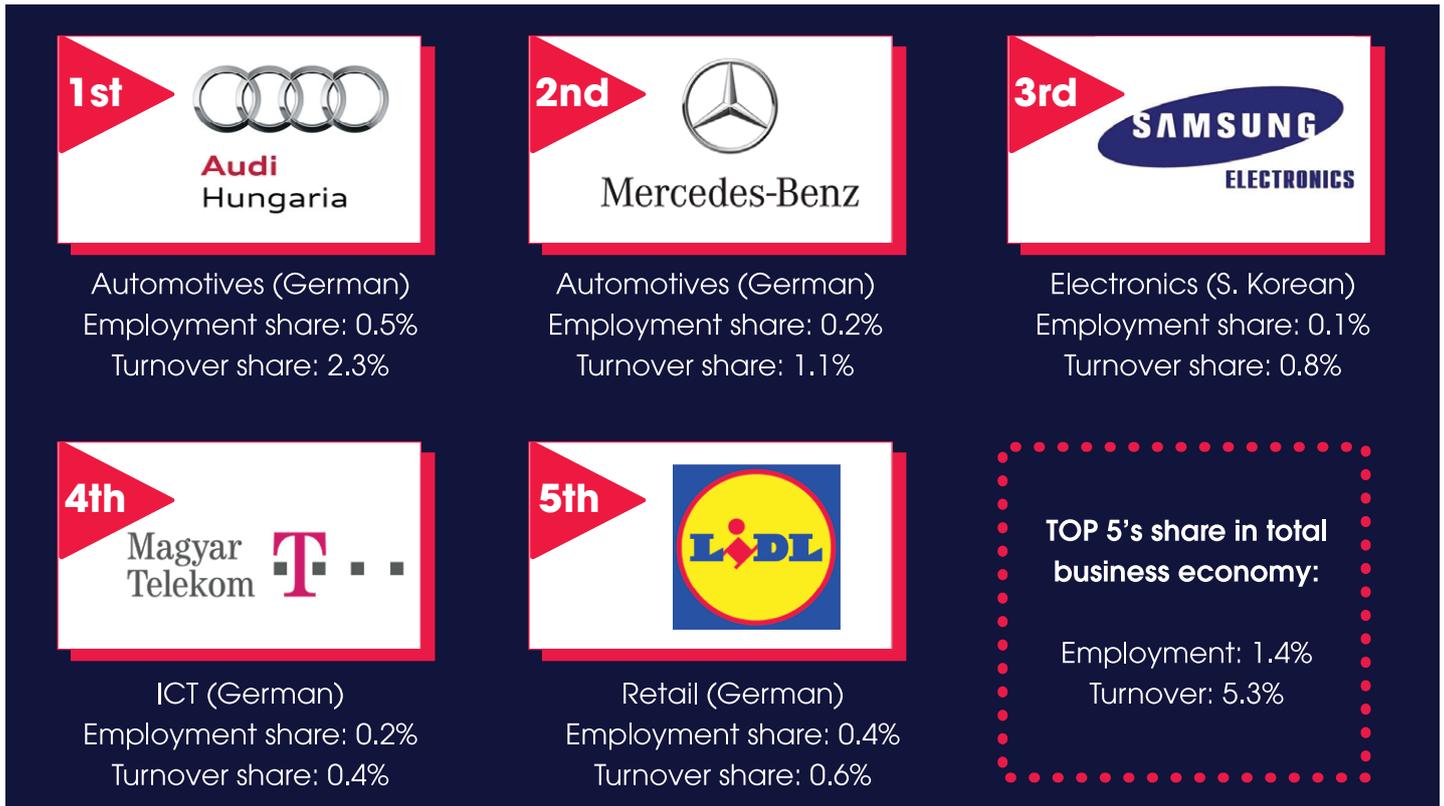


Chart 13: The 5 largest foreign-owned companies in Hungary (2020)¹³

US companies account for roughly 1 percent of total domestic employment. US subsidiaries employ 44,000 people in Hungary, of which 6,300 belong to Flextronics, which has 5 locations in Hungary. Citibank and car seat manufacturer Adient also have significant operations, but the largest hotel chain, Danubius Hotels, also has significant US ownership. ExxonMobil conducts service support activities (SSC) in Hungary. Among US-owned companies, the presence of companies engaged in special

(financial) activities is significant. Looking at official FDI statistics, one can conclude that US companies are practically non-existent in Hungary because 95 percent of US companies are SPEs that typically have only 1-2 employees.¹⁴ In another accounting approach, which is in line with the Eurostat correction approach for the final beneficial owner, US FDI accounted for 8 percent of total Hungarian FDI. We can accept this latter figure to reflect the reality, but indeed there is a large number of US-owned SPEs in Hungary.

Name	Since	Number of Employees
Flextronics	1992	6,269
Citibank Europe	2008	2,395
Adient	2014	2,228
ExxonMobil	2003	2,002
Danubius Hotels	1988	1,931
EPAM	2000	1,634
Sanmina-SCI	1997	1,493
National Instruments	2002	1,477
Howmet-Köfém	1991	1,220
CooperVision	2005	1,151
Outside of TOP10		22,264
TOTAL US		44,064

Table 1: TOP US founded companies in Hungary¹⁵

FDI typically does not build on Hungarian supplier capacities. With the advent of international value chains (GVC), it has become necessary to interpret deliveries in a detailed way, thus pointing out the real domestic content of a country’s exports. **Hungary is one of the countries with a low domestic value-added content in its exports, while the growth of the economy is highly dependent on export revenues.** The US does just the opposite: it can add significant domestic content to its exports through a knowledge-intensive economy, and it is not dependent on foreign consumer markets. The ideal economic structure for Hungary would be a German or Dutch model, where the contribution of exports to GDP would remain similar to the current situation, but this should be coupled with a high domestic value added content. This is key because, if

Hungary remains involved as an “assembling country” in the global process, the domestic multiplicative effects needed to break out of the middle-income trap will not be created.

Hungary is one of the countries with a low domestic value-added content in its exports, while the growth of the economy is highly dependent on export revenues.

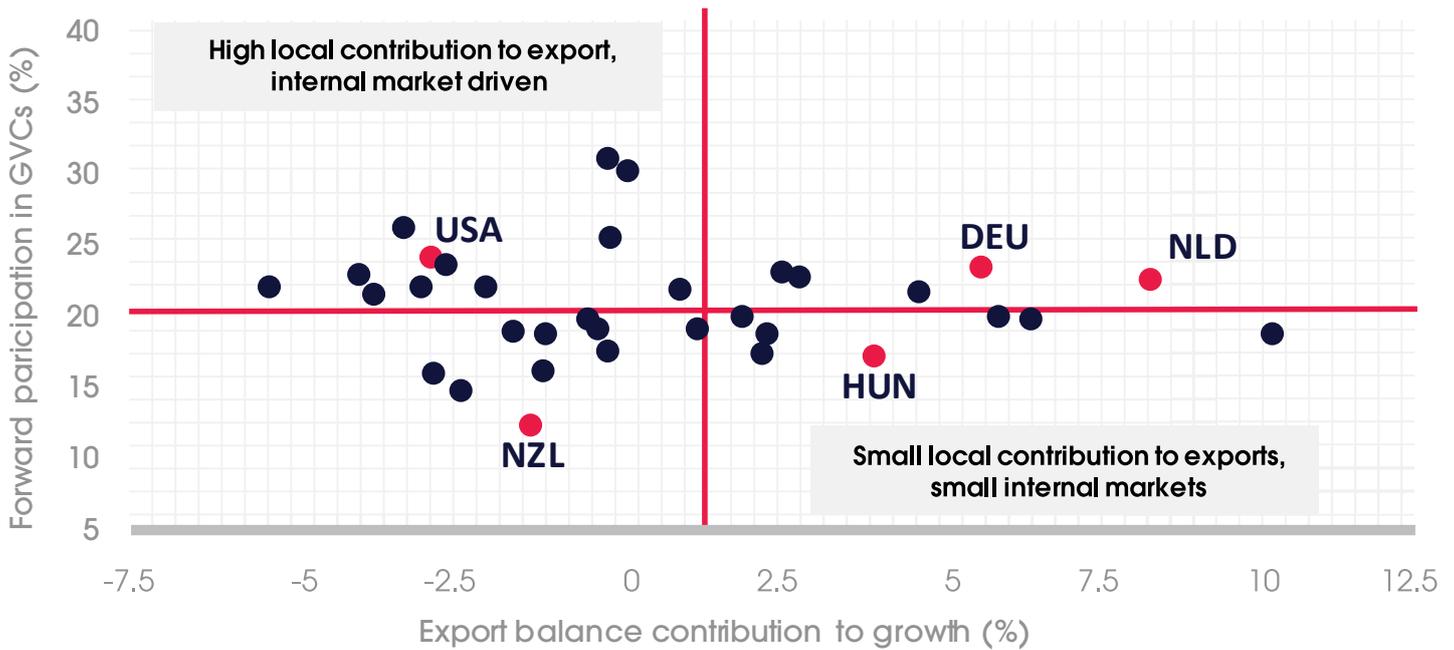


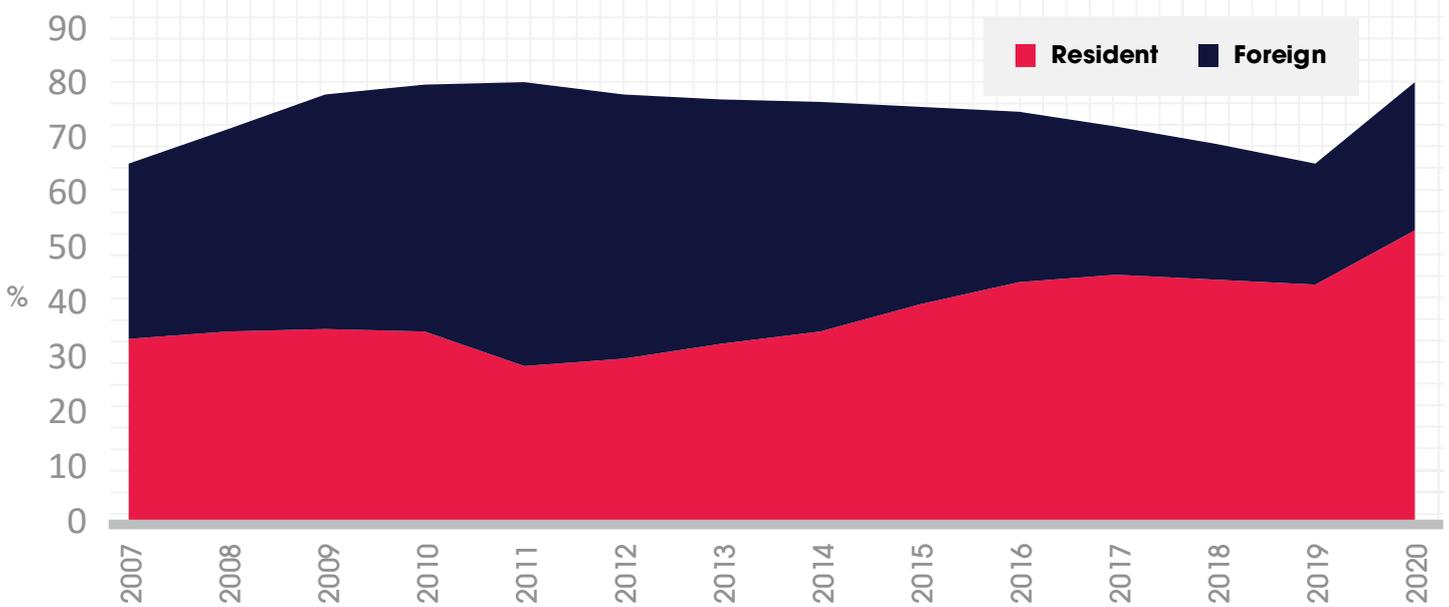
Chart 14: Participation in global value chains (GVC) and the contribution of exports to value-added: a schematic division of world economies (2018)¹⁶

The self-financing of the Hungarian economy started in 2010, which is still the determining factor in Hungarian economic policy.

In financial terms, Hungary has significantly increased its independence from international investors. As a small open country, Hungary is significantly exposed to the cyclical nature of international economic processes. In the event of a crisis, the freezing of export channels will increase the current account deficit, making the country an immediate target for speculators. Reducing this dependency can be achieved through real economic or financial channels. As it is clear that adjustment to the real economy is significantly more painful than restructuring financial dependency structures, the latter has tried to do so. Therefore, the self-financing of the Hungarian economy started in 2010, which is still the determining factor in Hungarian economic policy. The elements of this are:

01 Debt restructuring to domestic players: thanks to the actions of the central bank and the public debt management authority, domestic institutional players (typically banks) have become buyers of Hungarian government securities. The other, perhaps even more important step was the artificial increase in household government bond yields, making domestic debt financing attractive to household investors. As a result, the direct share of the Hungarian population in public debt rose to 25 percent by 2020, which is 6-7 times the EU average. With this, the state became one of the main savings managers of the Hungarian population, which significantly increased the government's room for maneuver. From the spring of 2020, similarly to the European Central Bank, the Hungarian central bank became a buyer of forint government securities, thus stabilizing the long segment of the yield curve and strengthening monetary transmission.

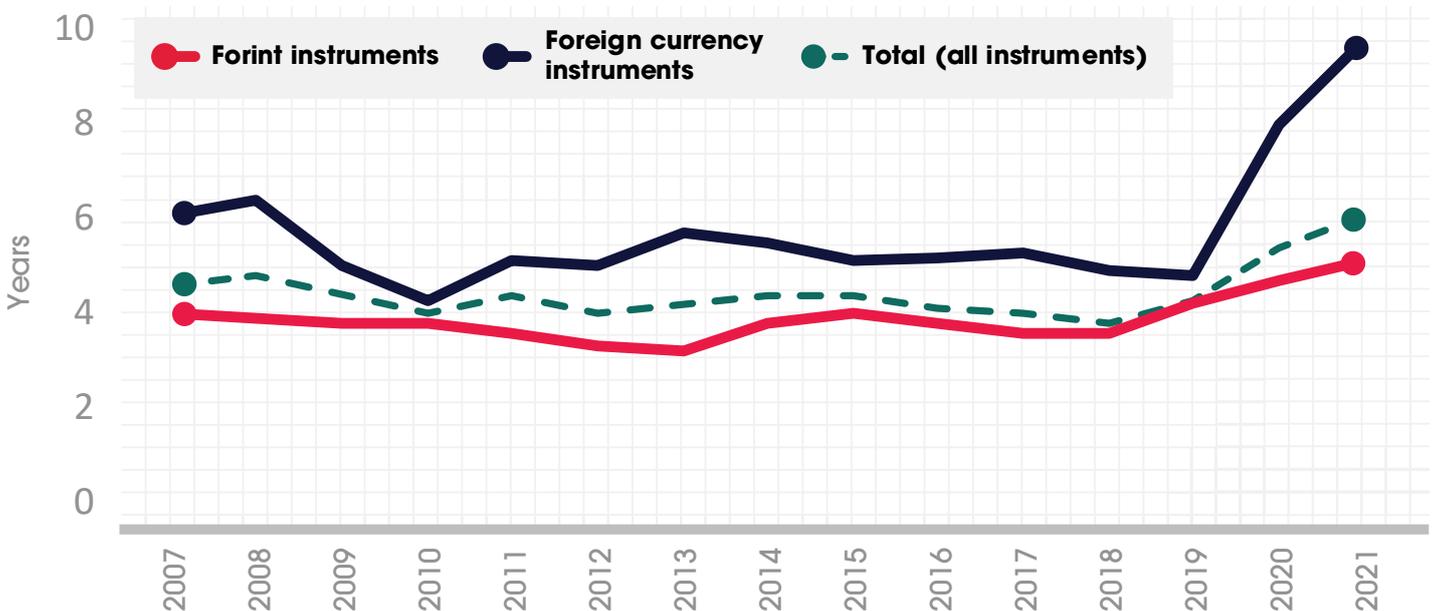
The direct share of the Hungarian population in public debt rose to 25 percent by 2020, which is 6-7 times the EU average.



02 Chart 15: Gross consolidated government

Redemption of foreign currency instruments: the debt managing authority gradually redeemed foreign currency government bonds (mainly denominated in euros) by issuing forint instruments. This allowed the interest burden not to increase significantly in the event of a currency devaluation. The country's foreign currency needs are mainly covered by EU transfers, which are redeemed by the central bank in HUF. These transfers accounted for the bulk of the central bank's profits in recent years, which the central bank spent on, for example, the purchase of government bonds (on the secondary market).

03 Extending maturities: In the pre-2021 world economy with low central bank interest rates worldwide, Hungary has also successfully extended its debt maturity structure. The change was spectacular, especially in the case of foreign currency assets: while before 2019 the average maturity was 5 years, by 2021 the maturity of foreign currency bonds increased to 10 years. In the case of forint instruments, only a slight improvement was observed.



04 Chart 16: Government bond maturity in Hungary¹⁸

Compliance with EU rules: The EU’s excessive deficit instrument allows the EU Member States to run budget deficits at a 3 percent maximum. Hungary achieved this between 2012 and 2019, which also allowed for a slow decline in the debt stock (EU regulations apply too).

with a budget close to zero. On several occasions, in the last days of the year, the government decided to withdraw significant sums from the budget on the grounds that it would still be able to meet EU regulations. However, this last-minute spending typically supported non-productivity-enhancing projects.

05 **Achieving relatively good debt-level indicators:** Despite the self-financing program, Hungary still needs significant international funding, so it needs to ensure that its stability indicators are the same or better than those of other countries of similar size. In this respect, the EU average is the norm: since 2010, neither government debt nor the current account deficit nor the budget deficit has differed significantly from the EU average. However, **at the same time, Hungary missed the opportunity to reduce its public debt further by planning**

“Hungary missed the opportunity to reduce its public debt further by planning with a budget close to zero.”

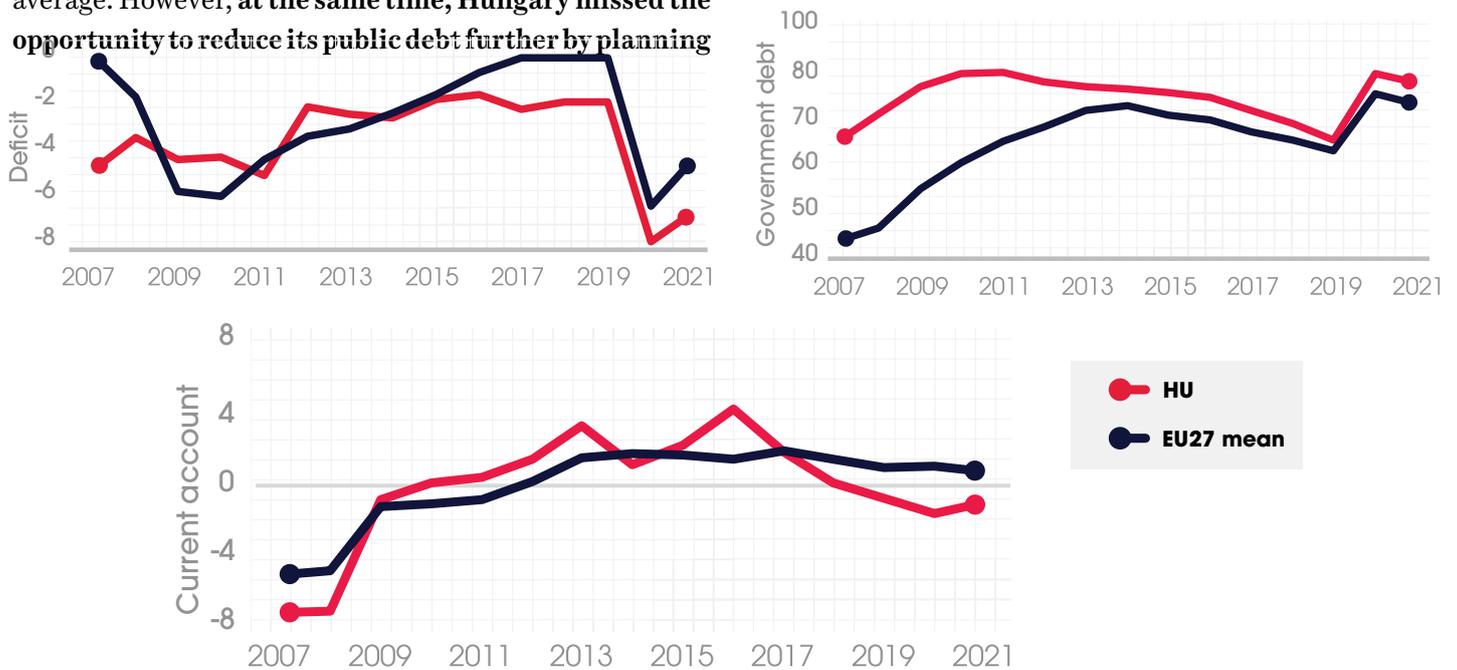


Chart 17: Financial vulnerability macro indicators in Hungary since 2007¹⁹

In 2010, the current government announced a policy to strengthen political and economic cooperation with Russia, China, and other Asian and African countries. The ultimate goal was to reduce Hungary’s unilateral dependence on Western markets. As part of this, the government strengthened the trade development capacities of its foreign representations (trade houses, embassies), but the effort was mainly unsuccessful. Hungary’s foreign trade is still more than 80 percent directed to the EU, and this dependence has only increased in recent years. The

opening up to the East did not appear alone in exports because Western relations grew faster. Through interstate projects, the Hungarian state gradually approached the great powers of the East, especially Russia and China. In addition to minor advances such as the establishment of a permanent air link between China and Budapest, several agreements requiring significant Hungarian investment have been reached:

01 Budapest-Belgrade railway line (partner: China; planned completion date: 2030). China has significant port capacity in Greece, but its western logistics capacities are limited. This is to be facilitated by the construction of a railway line that would be built through Hungary's southern neighbor Serbia and would allow high-speed freight transport. The cost of the project in Hungary is 2.2 bn USD, which would be 85 percent financed by a Chinese loan. **The investment cannot be supported by technical arguments**, because no substantial increase in freight traffic is expected. There is an intergovernmental contract signed for the project< however, the preparation of the construction has not yet required a significant cost allocation from the central budget.

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02 Vo railway ring road and Záhony lifting terminal (partner: Russia; planned completion date: 2030). The demand for a way to circumvent Budapest on railroads was already formulated in the 1970s. The cost of the Vo railway ring is 2 bn USD, which would be financed by a Russian loan. Implementation has become questionable because of the sanctions imposed on Russia. On a market basis, a logistics terminal near the Ukrainian border (Fényeslitke) has already been built from private sources, but its return has become highly questionable due to the war in Ukraine. Záhony lifting terminal would be an addition to Fényeslitke, but the two projects are independent.

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03 Railway carriage agreement with Egypt (partner: Russia, planned completion date: not specified). Through a Russian-Hungarian joint venture, new railway carriages will be produced for Egypt, the first 600 of which have already been delivered. The funding structure of the project is unknown.

04 Fudan University Budapest Campus (partner: China, planned completion date: 2026): The agreement seeks to create the first foreign campus of a Chinese university with an elite place in the international rankings. The project's budget is 1.3 bn USD, for which the site and finance are to be provided by the Hungarian state. The deployment of the university met with fierce social resistance, prompting the government to postpone its implementation, yet not officially signaling its withdrawal from the project to China.

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05 Paks II. nuclear power plant investment (partner: Russia, planned completion date: 2030-2035). The current Paks nuclear power plant using Russian technology is nearing the end of its life cycle, making it necessary to build new capacity. Without any substantive professional discussion, the government decided to build a new nuclear power plant that would be built alongside the existing units. The investment is significant at USD 13 bn. As it currently stands, the government has spent USD 1 bn on the project since 2014, but the government's reluctant commitment is also shown by the fact that the planned capital increases for the project fell far short of what was planned in the annual budget. A capital increase of 0.8 bn USD is planned in the budget for 2022; however, due to Russian sanctions and authority approval problems, the future of the investment is questionable. As alternatives, extending the life of existing units or installing small modular reactor units (SMRs) have emerged. However, the latter can only be implemented over a decade. The government is currently on standby over the project.



Chart 18: Geo locations of large bilaterally agreed projects with China and Russia²⁰

Overall, Hungary typically has more contractual obligations to Russia than to China, the most important element of which is the construction of the Paks nuclear power plant. If no agreement is reached in Ukraine and Western sanctions remain in place, the Hungarian state is likely to withdraw from the Paks treaty. However, it is a challenge that the nuclear fuel and other components in the current Paks block come from Russia, so any sanctions against them would directly endanger the continuity of Hungarian power generation.

“ Hungary typically has more contractual obligations to Russia than to China, the most important element of which is the construction of the Paks nuclear power plant.”

Paks II Nuclear Power Plant, USD 12.4 bn	Budapest-Belgrade Railway, USD 2.1 bn	V0 Railway, USD 1.9 bn	Fudan University Campus Budapest, USD 1.2 bn
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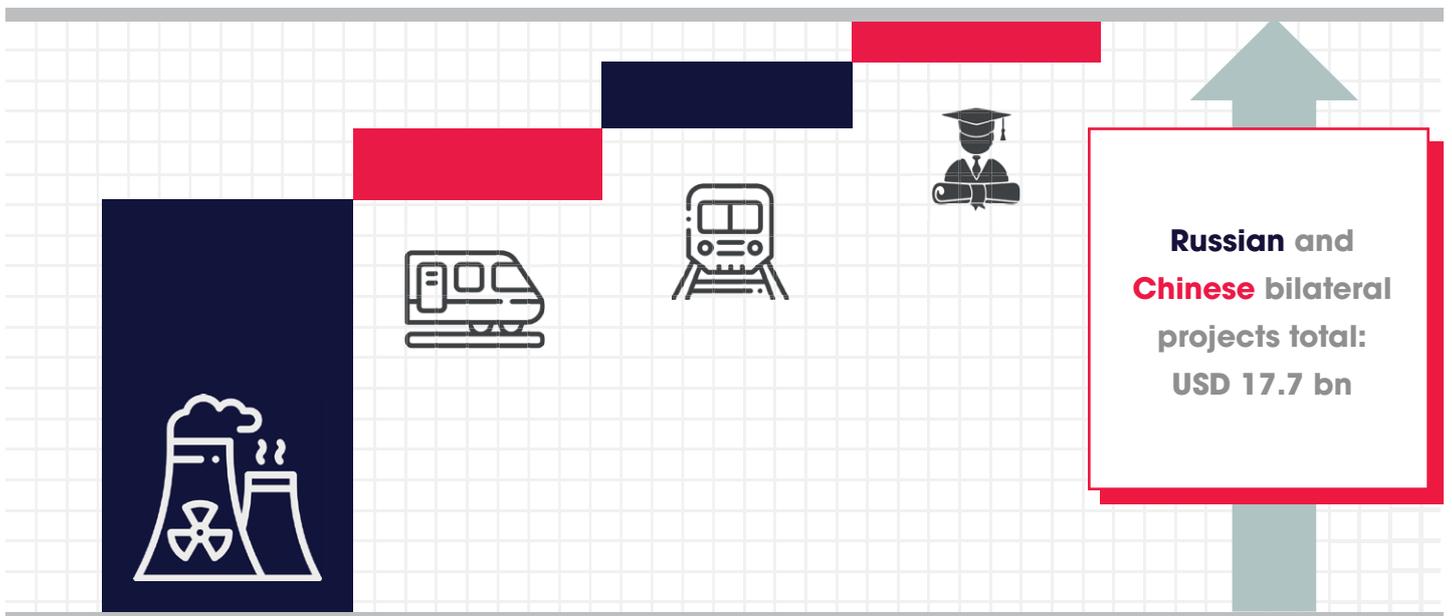


Chart 19: Large bilaterally agreed projects with Eastern superpowers (in billions of dollars)²¹

The Western sanctions imposed on Russia have a particular effect on three Hungarian companies, which are mostly Hungarian-owned, but the impact on the national economy is negligible.

01 The Russian market has a 17 percent share of sales at the Richter Gedeon pharmaceutical plant, and the company has had a manufacturing base in Russia since 1996. At the same time, the company and investors consider the company’s position to be stable.

02 The largest Hungarian bank, OTP, has 8 percent of its loan portfolio in Russia, but 8.3 percent of its equity is also listed in Russia. Ukrainian

operations account for 5.4 percent of the equity. The company’s shares plummeted on the Budapest Stock Exchange with the outbreak of the conflict in Ukraine, but financial stability problems are unlikely (liquidity rates are adequate).

03 The Hungarian partly state-owned oil company MOL is currently benefiting from sanctions against Russia. The company has smaller oil production of 4,000 barrels a day in Russia, but its main exposure is in import and refinery activities. 80 percent of Hungary’s oil supply comes from Russia, which is both an opportunity and a threat to the company.

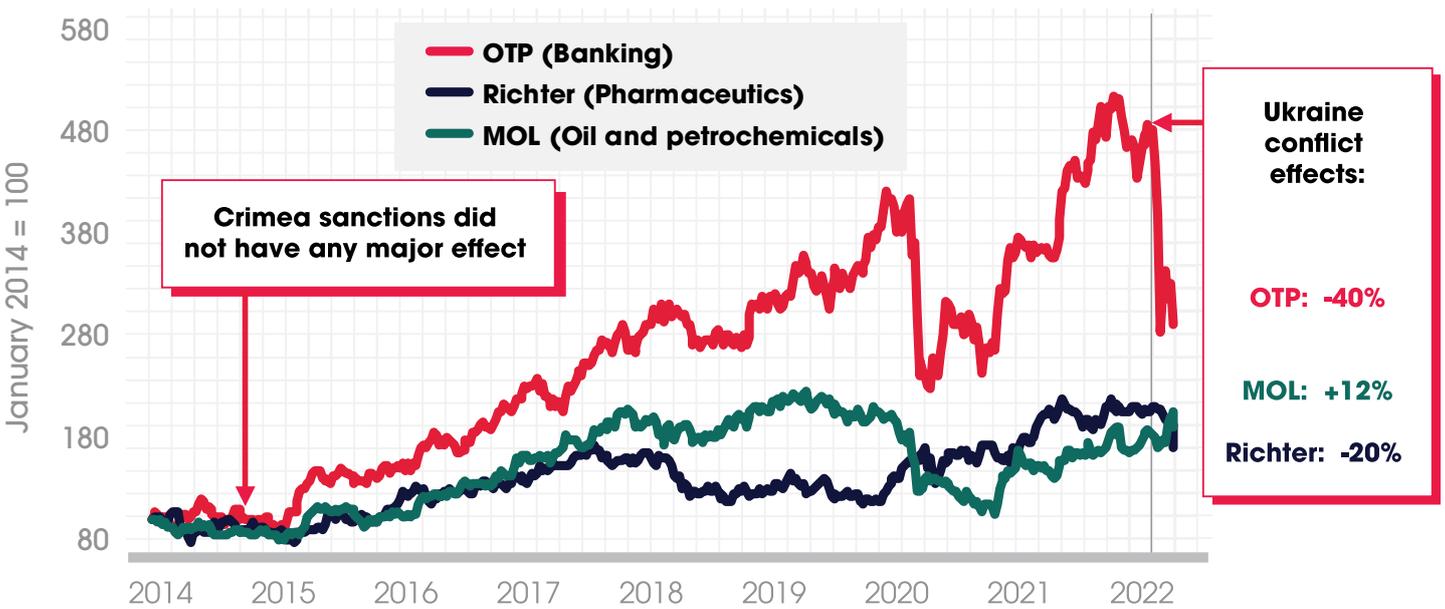


Chart 20: Budapest Stock Exchange quotes of Russian-exposed large Hungarian companies²²

► **THREAT:**

There is a danger that the European Union could impose sanctions on imports of Russian oil. If this were to happen, the switch to other oil derivatives would entail significant additional costs, and possible alternative routes (mainly from the Adriatic) would need to be developed and it is still doubtful whether they will be able to fully meet MOL's needs.

► **OPPORTUNITY:**

At the same time, the high dependence on Russia is an opportunity for MOL; as Urals oil is currently much cheaper to obtain than the westernmost Brent, the company can therefore make a significant profit through refined products. Although the Hungarian government is pegging fuel prices, which is eroding the company's profitability, the company is making significant gains on exporting refined products to neighboring countries.

Thus, from both the real economic and financial point of view, Hungary is significantly dependent on international markets and the decisions of corporate centers. Dependence on Russia can be concluded, both through bilateral projects, and through the heavy exposure to Russian energy inputs. In order to reduce its financial dependence on the rest of the world, the government has significantly improved its self-financing program, but debt ratios remain high, while the country is currently in a twin deficit situation (central government deficit and current account deficit). In the next chapter, we present the biggest challenges facing the Hungarian economy.

4. THE BIGGEST POST-ELECTION ECONOMIC CHALLENGES

Below we present some of the biggest economic challenges after the parliamentary elections in April this year and the possible answers to them. Given that these are daily events, what is assessed here was valid at the time the document was born (May 12, 2022).

01 Sectoral effects of the war in Ukraine: Although energy imports have not been affected by EU sanctions, commodity prices have reacted strongly to the uncertainties. As a result, gas prices in Europe have risen significantly, up to 4-5-fold. In some sectors, natural gas is not only an important indirect input, but is also used directly, mainly in the chemical industry. Persistently high energy prices are circulating throughout the supply chain: one of the most important end products in the chemical industry is fertilizer (ammonia), an essential input for agriculture, and agricultural margins have a direct impact on food prices. At present, the government has no plans to provide priority assistance to disproportionately troubled sectors, the main reason for which may be the poor state of

the budget. Hence, the sectors strive to pass on their costs up the production chain, leading to price increases. Signs of a decline in the growth of turnover were also seen in the industry at the beginning of the year, indicating that they are not always able to pass on prices. Given that energy prices may remain high for some time to come due to gas storage cycles, there is a strong chance that chemical activities will find the right conditions outside the EU. Adding to the problems in the sector is the need to increase efficiency due to EU emissions rules, but the impacted companies will not have the resources to do so on their own.

“In some sectors, natural gas is not only an important indirect input but is also used directly, mainly in the chemical industry.”

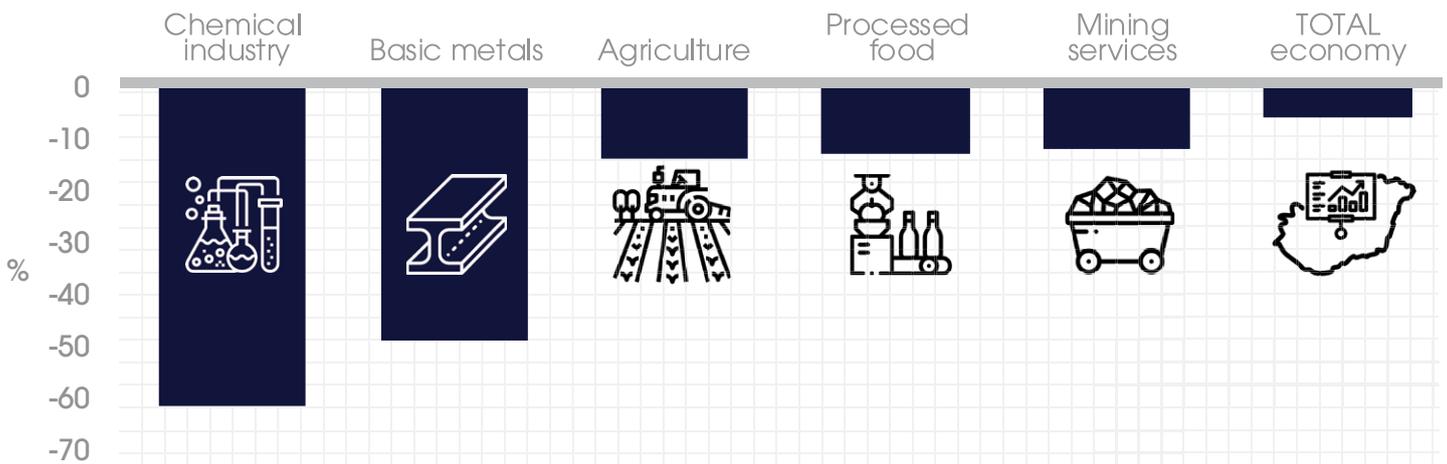


Chart 21: Sectoral exposure to gas price hikes: the case of Hungary (value added based estimates from input-output relations)²³

02 High inflation, especially for food: Food prices have been on an upward trend worldwide since last year, but the real leap came from the Russo-Ukrainian war. As these two countries are major exporters of grain, world market prices have jumped substantially, prompting many governments, including Hungary, to take measures to restrict exports. Due to supply uncertainties and increased input costs (see the previous point), food prices could rise by up to 20 percent this year. In addition, headline inflation in Hungary is higher than the EU average, despite the government’s introduction of price restrictions on a number of products. Among the limited products, the most important items are vehicle fuel and household utility costs (see next section). The central bank (MNB)

has only a limited effect on high food prices because the Hungarian Central Bank is not able to curb fundamentally inelastic food demand by changing interest rates. On the supply side, tightening monetary conditions would not significantly prevent commodity prices from rising, but could jeopardize many companies in difficulty (for example, by making it more difficult to obtain working capital loans). As a result, the population is forced to bear the burden, but the government has successfully prevented inflationary expectations from rising by introducing price stops for some everyday, basic food items. As a result, inflation in Hungary is not expected to ease.

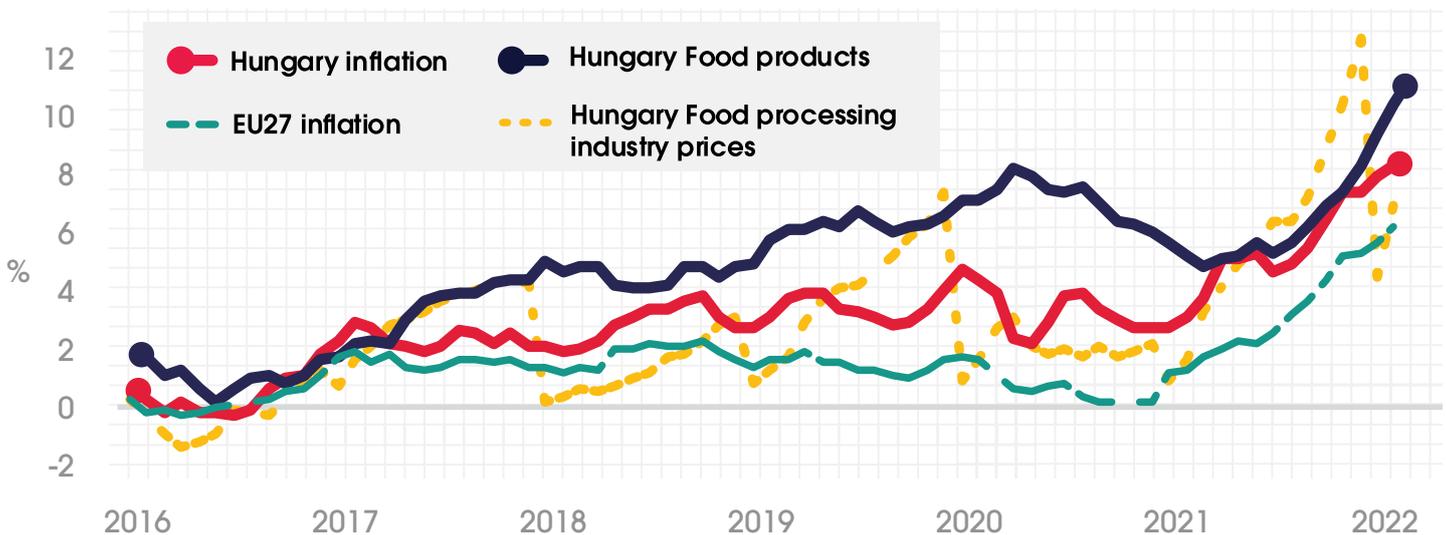


Chart 22: Consumer inflation in Hungary and the EU27²⁴

03 Support for utility prices (overhead costs) and vehicle fuel prices: Since 2013, the Hungarian government has frozen residential gas prices as well as some additional items (sewerage, water, garbage charges). The price freeze initially served social purposes, in the framework of which the population received cheaper mains gas compared to world gas prices. Until mid-2021, service providers made a profit because world gas prices were at record lows, so the population paid more for gas for years than if it had obtained it from the free market. As a result of the hectic economic relaunch after COVID, gas prices have risen, to which the war in Ukraine also contributed significantly, with the result that service providers are suffering significant losses and now the population is paying less. There is a price compensation system in place, which

compensates market companies for their losses incurred because of government policy. Maintaining the overhead reduction could cost around HUF 1,200 billion this year (USD 3.4 billion), which is a significant burden on the budget and also threatens the macroeconomic balance. At the same time, the Hungarian government is reluctant to reform the system, as it made maintaining the utility cost reduction program a central element of its campaign in the April elections. For this reason, only a few elements of the system will likely change (for example, SMEs could be excluded from the scope of support), but the support system will not fundamentally change. Such a decision would require a significant budgetary adjustment.

The latest element introduced last fall is the price cap for automotive fuel prices. Under the rule, both the retail price and the wholesale price are capped, which results in a significant loss for wholesalers and retailers outside the state oil company MOL. MOL will not lose out because of the the Urals-Brent spread. At present, MOL procures Russian oil at prices 30-40 USD/ barrel lower than the Brent price in the region. As a result, it is able to sell its refined products, mainly in Slovakia and Czechia, at a significant profit. However, there is a high possibility it will not continue to do so. Recent Hungarian fuel consumption data shows an all-time high consumption because a large number of consumers from neighboring countries

fill their vehicles in Hungary. Transit traffic plays an incremental part in the abnormal demand as well. If price control is set to remain, MOL will not be able to supply all of its consumers. The situation is politically delicate too because MOL is an important provider of fuels in Czechia, Slovakia, and south Poland too. The Hungarian government might soon need to choose between keeping the price control and restricting exports or abolishing the price control but suffering a significant loss of popularity. The latter scenario is more probable, notably because the government communicates that the price capping is only covered until July.

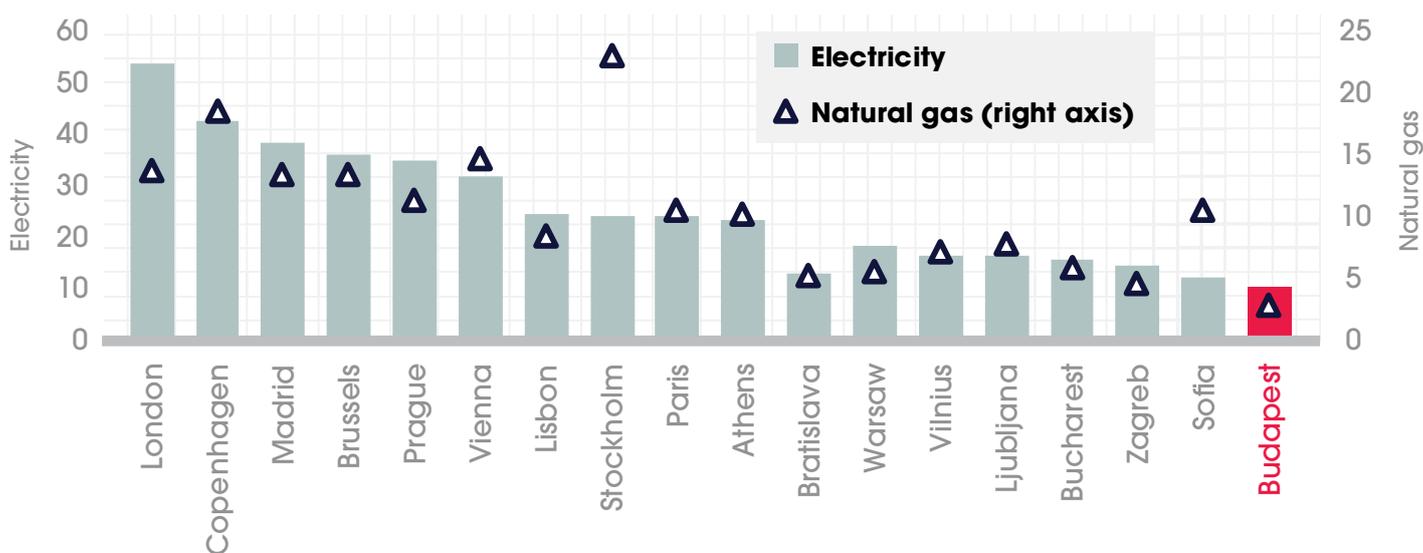


Chart 23: Energy prices in European capitals, eurocent/kWh (as of March 2022)²⁵

04 The economic slowdown: The war in Ukraine has worsened the economic outlook. The Hungarian government’s victory in the election was largely due to the fact that living standards in Hungary had risen, albeit to a lesser extent than in many Eastern European counterparts. This required much faster growth than the EU average. If growth slows or stops, one of the cornerstones of the government’s political legitimacy could be shaken. As a result, the government needs to find a solution that can keep the economy on a growing trajectory without creating a larger deficit. The only channel for this at the moment is to

let companies spin the economy via wage growth. Due to the tight supply situation in the labor market, wages are already highly dynamic, which provides support for consumption. While higher inflation erodes the purchasing power of wages, it can also increase budget revenues. Because of this, consumption could be a catalyst for economic growth over the next 1-2 years. Growth may be slightly higher than the EU (arithmetic) average.

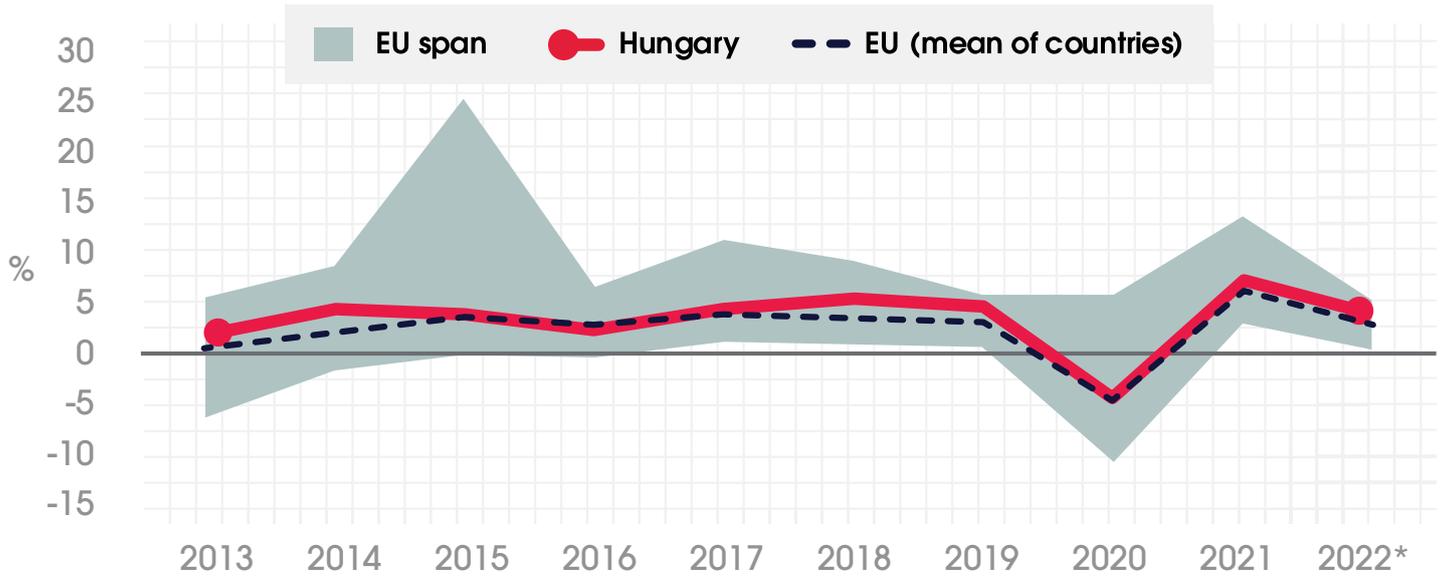


Chart 24: real GDP growth (year on year)²⁶

05

Budget deficit: Until the beginning of the COVID pandemic, the government pursued prudent economic policies to comply with EU fiscal rules. At the same time, fiscal policy was not counter-cyclical: in the upturn cycle from 2013 to 2019, the budget deficit was higher than the EU (arithmetic) average, so the budget was relatively stronger in supporting economic growth than elsewhere in Europe. It is worth noting here that EU subsidies have only given impetus to the economy, so the budget situation before 2019 can be considered even more pro-cyclical. The years 2020 and 2021 were focused on defense against the COVID epidemic, for which the government had not accumulated any reserves before 2019. By 2022, the structure of the budget had become unsustainable:

- ▶ On the one hand, the government decided on household transfers of roughly 2 percent of GDP, not long before the April elections. It covered only a small part of the decision by postponing some previously planned investments.
- ▶ On the other hand, the government continues to supply natural gas to residential customers (and smaller SME segments) at fixed, very low prices, at a cost of more than 2 percent of GDP.

Based on expectations of the Equilibrium Institute and other market analysts, the government will take corrective actions, but austerity measures that directly affect the population are not expected. However, the Hungarian

government denies that corrective actions are going to be necessary. High inflation helps budget planning through revenues on consumption, as Hungary has the highest value-added tax in the EU (27 percent general rate). However, if policy remains unchanged, further adjustments may be needed, which could result in the government taxing foreign-owned sectors. In this respect, the banking sector and the retail sector could be targets, and these taxes will further increase inflation. An increase in the financial transaction tax could arise, which would adversely affect the wealthier strata. Increasing the steps taken to eliminate the underground economy may also be a realistic option. Such efforts have greatly improved the budget balance in the past (for example by reducing the VAT gap), so further measures are expected, mainly in the area of eliminating unreported employment. However, the most likely scenario is that the government will postpone non-vital investments, which are likely to affect geopolitical projects (Paks II., Vo railway ring road, Budapest-Belgrade railway line). At the same time, the government will have to start resolving its dependence on Russian energy sources, but it is likely to wait until a European decision on possible central alternatives is made. Receiving EU development funds is key to the revenue side of the budget, but this is not being disbursed by the European Commission due to its concerns about the rule of law. If the rule of law issue is not resolved, Hungary will need to issue foreign currency bonds, but this can only be resolved at a high cost (at the time of writing, the yield on 10-year Hungarian government bonds is 7.5 percent, the highest among EU members).

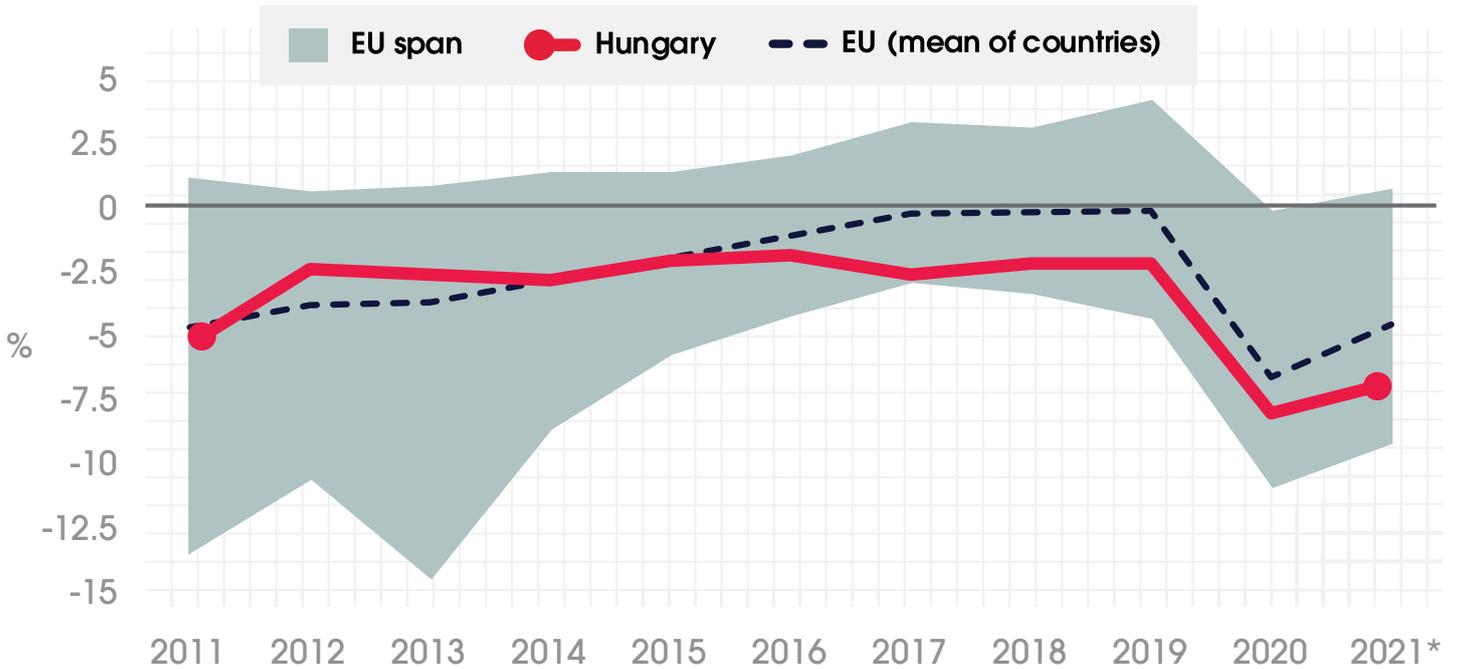


Chart 25: Gross central government debt, as a percentage of GDP²⁷

06

Exchange rate: The new era of economic strategy starting in 2013 sought to support growth with low real interest rates. Until and including 2019, it was able to do so without losing credibility, given the significant reserves in the labor market and the favorable external inflation environment (an important consideration for small open economies). As the Hungarian Central Bank provided lower real interest rates than the neighboring countries, the Hungarian currency continued to weaken. This was even though the country’s current account was in surplus for several years, which, according to the textbooks, would automatically strengthen the exchange rate. However, from 2018 onwards, inflation gradually returned to Hungary, significantly exacerbated by the hectic global situation after COVID and the conflict in Ukraine. In 2021, the external inflation environment increased drastically, so the internal inflationary pressure will also be increased by a weak forint, to which the central bank should respond with a larger interest rate increase. However, partly due to its previous policy, there is not much room for this: if

significant tightening were to take place, it would increase the risks of stagflation in Hungary and make debt financing even more expensive. As a result, the state is interested in keeping the forint exchange rate relatively stable in the short term (not excluding the possibility of a slow devaluation), which can only change if EU funds arrive in Hungary (these are non-refundable). If they arrive and the forint continues to weaken against the Euro then the central bank’s results will improve, so there would be no need for large budget financing of the central bank’s loss. From a real economic point of view, a weak forint is good for the economy in the short run. As the forint-denominated costs (typically wages) of foreign-owned companies - which account for the majority of exports - do not rise significantly, the country can stay afloat. On the other hand, in the longer run, the sustainability of the weak forint policy can only be imagined if the population’s living standards fail to improve significantly.

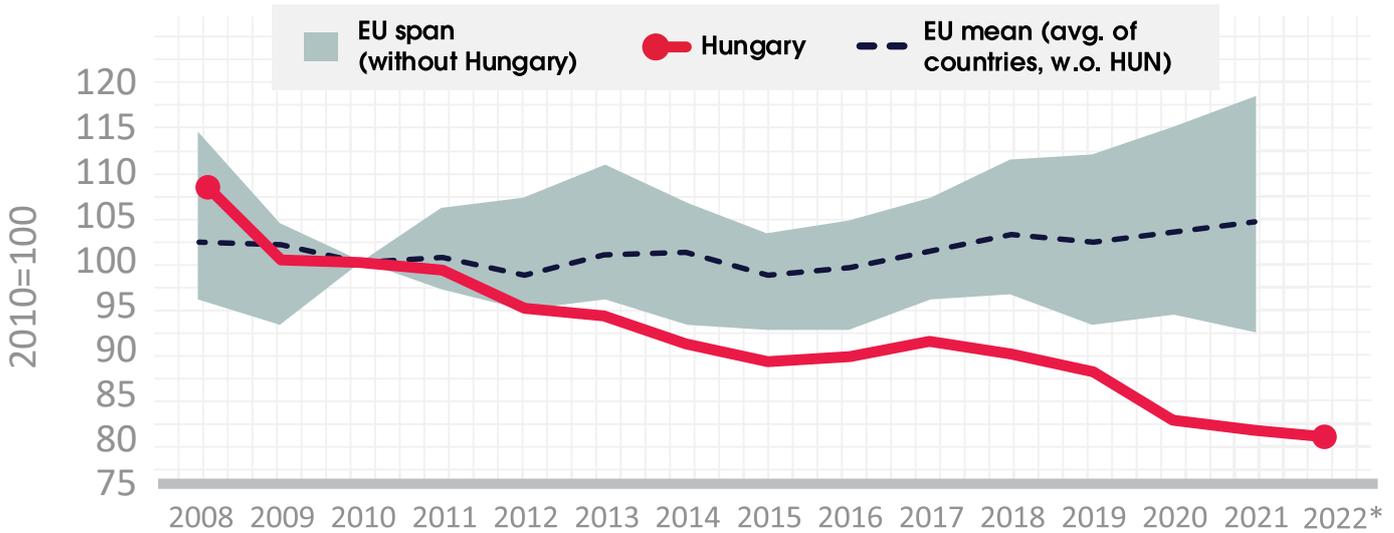


Chart 26: Nominal effective exchange rates (37 countries) in the EU (a decrease means a devaluation of the currency)²⁸

07 **Delays in EU transfers:** As mentioned in point 5 on the budget, the stalling of EU transfers poses a significant financing challenge to the Hungarian economy. In addition to financing, a sacrifice of growth is also expected: if the Hungarian budget does not take over the lost EU funding, economic growth may slow down significantly, which may backfire on the budget’s ability to finance it. **Hungary is one of the most EU-dependent countries in the EU: net EU transfers have accounted for more than 3 percent of GDP in the last 5 years, while**

Hungary spends the most on state aid to subsidize resident businesses, accounting at 2 percent, a figure twice as high as the EU average.²⁹ If the government fails to reach an agreement in Brussels on the Rule of Law mechanism, a full rethink of the current development model may be needed. In our opinion, this could benefit the country in the long run (transfer dependence would be resolved), but it would certainly put further pressure on the budget in the short run.

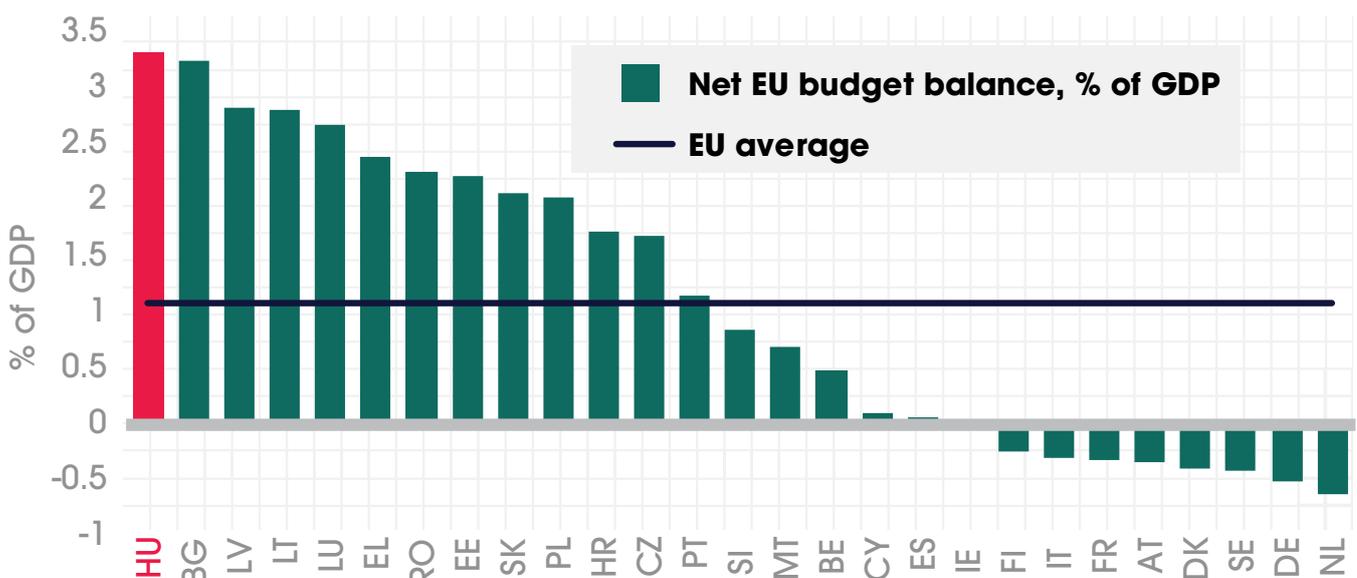


Chart 27: Net EU budgetary positions by member state: average between 2015-2020³⁰

08

A sharp rise in loan installments: Earlier this year, the government set an interest rate cap on retail mortgages, shielding a population opting for variable interest rates from a rise in installments until the end of June. For floating-rate loans, which account for about a third of retail loans, the most likely scenario seems to be to switch to fixed-rate loans, but setting interest rates involves significant risks and additional unpredictability in the system. This is partly due to the fact that the fate of central bank interest rate conditions also depends on the length of the conflict in Ukraine, so the population will

probably bear the price of the measure in the long run. Another aspect is that the public will not be interested in fixing interest rates on their future borrowings if they see that the government is changing the rules retroactively. The MNB been pushing in vain for years to fix repayments on retail loans of households (and thus making the household pay a greater burden than market interest rates for years): if the government retroactively changes the rules, confidence in the system will decline, which could discourage borrowing (moral hazard).

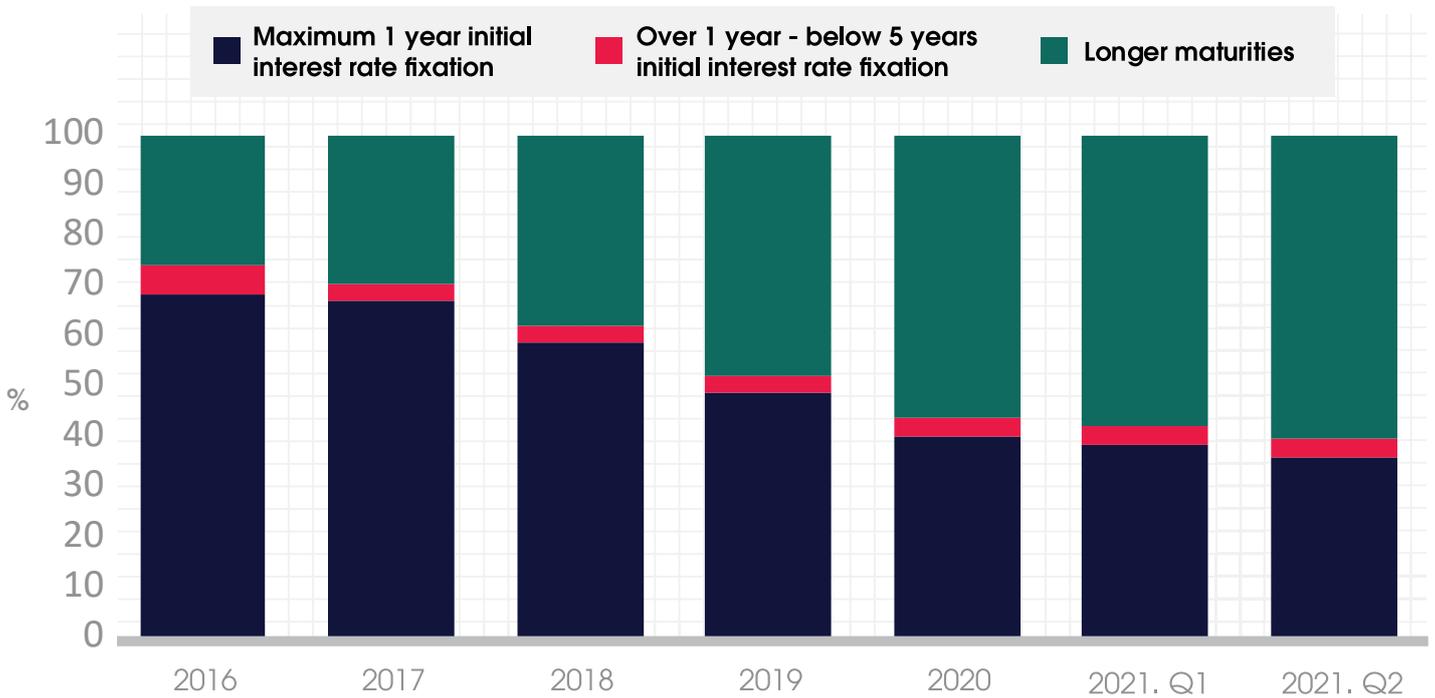


Chart 28: Distribution of mortgage loans outstanding based on initial interest rate fixation period³¹

09

Reducing Russia’s energy dependence: Hungary is one of the most exposed states in Europe to Russian energy sources. Given its current nature and the time horizon of the topic, we would like to recommend a longer explanation to the reader. The post-election outlook of the economy is largely characterized by this topic. The following section presents dilemmas related to halting Russian energy imports to Hungary. **The topic is**

of global importance because Hungary has a veto right on the EU’s sanctions on Russia. On 6 May, the government announced that Hungary would veto the ban on Russian oil imports, even with a derogation for transition. Hungary has a very important self-interest in the veto since there is no viable short-term alternative to Russian oil. This is especially true if the government seeks to maintain its price capping policy on domestic fuel consumption.

5. SCENARIOS FOR REDUCING ENERGY DEPENDENCY

Russian supply dynamics and the regional energy landscapes will rapidly change in the next few years, given the already unfolding energy transition, but even more so if EU member states take sweeping action to reduce their reliance on Russian energy. The chosen 2027 deadline is arbitrary, even if the European Commission indicated a 2025–2027 timeframe for the full implementation of diversification.³² **The 2027 diversification deadline set by the EU Commission is largely reasonable, but certain dependencies cannot be replaced within even this timeframe. This predominantly applies to nuclear energy. At the same time, the other three forms of dependence - oil, natural gas and coal - can be substituted to a large extent by 2027.**

Hungarian energy dependence on Russia cannot be assessed on its own, but rather as part of a European interdependence situation.

Hungarian energy dependence on Russia cannot be assessed on its own, but rather as part of a European interdependence situation. Based on the International Energy Agency estimates, Hungary is the second most dependent country in the EU on Russian fuels after Lithuania only. Hungary's dependence is large because of indirect flows too. For instance, for

natural gas, it is almost certain that all imported natural gas molecules - amounting to more than 8 bcm in 2021 - were of Russian origin, while direct dependency is much smaller. Intertwined dependencies also lead Hungary to be affected by a suspension of coal exports. It may not import coal, but Poland's and Germany's reliance on Russian volumes mean that supply problems will have a ripple effect through electricity market volatility.

Hungary, like many inland countries in the region, did not declare any diversification targets at the time of writing, notably because Hungary and other regional countries are unwilling to pay a security premium for non-Russian energy. This premium can be almost prohibitively high, assuming Russia fights for its market share in European markets by undercutting alternative sources. In addition to financial concerns, there are key dynamics that dictate the rationale to avoid a hard deadline in the case of certain fuels, natural gas in particular. The technical feasibility and availability of alternative supplies to diversify largely depend on the future design of the pipeline network and flows in 2025, once Germany, Poland, and perhaps Italy substitute Russian imports.

Hungary and other regional countries are unwilling to pay a security premium for non-Russian energy.

I DEPENDENCIES IN A NUTSHELL

Hungary is almost entirely reliant on Russia for its physical hydrocarbon and nuclear supplies, much like Central Eastern Europe (CEE) in general. Before the outbreak of the war, almost all oil and oil product imports came from Russia - 86 percent of total demand in 2020.³³ Natural gas imports (85 percent of total consumption in 2020) were likely Russian gas molecules, even if some of this was not bought directly from Gazprom. The four-bloc, Soviet-built 2000 MW thick Paks I. nuclear power plant runs on Russian fuel and its operations are partly dependent on Rosatom’s technological support. Both natural gas and nuclear segments would stop functioning in the event of longer-term, full-scale sanctions on Russian exports. Thermal coal and lignite imports are the only exceptions to Hungary’s energy dependence, as imports are effectively non-existent. **Hungary also imported 25 percent of its electricity needs, primarily, but not exclusively, from EU markets in 2020. These electricity imports could only be replaced through the higher utilization of domestic gas-fired power plants in the short- to mid-term.**

Hungary’s hydrocarbon imports were relatively stable in the 2010s. Domestic production is quite small, but depletion has been successfully replaced in the last couple of years by slowing the decline of natural gas output and gradually growing oil production. Total demand for petroleum

products has been slowly declining in line with European trends, resulting in imports of 6.3-6.5 million tons of oil equivalent (Mtoe) by the late-2010s. Natural gas demand peaked in the mid-2000s at around 13 bcm/a and currently remains in the range of 9.5–10 bcm/annum.³⁴ The bulk of the decline was a result of switching from expensive domestic gas-fired generation to electricity imports from the EU. Large-scale energy efficiency programs in the building sector could reduce heating demand substantially. Given natural gas’ role in meeting the heating needs of households and commercial buildings, this could save as much as 2 bcm/a in natural gas imports (around 25 percent of total demand), as estimated in the Hungarian National Energy and Climate Plan.³⁵ Meanwhile, demand can be increased if scarcity in the electricity markets forces higher utilization rates of the partly outdated power plant fleet within the country.

Hungary is almost entirely reliant on Russia for its physical hydrocarbon and nuclear supplies, much like Central Eastern Europe (CEE) in general.

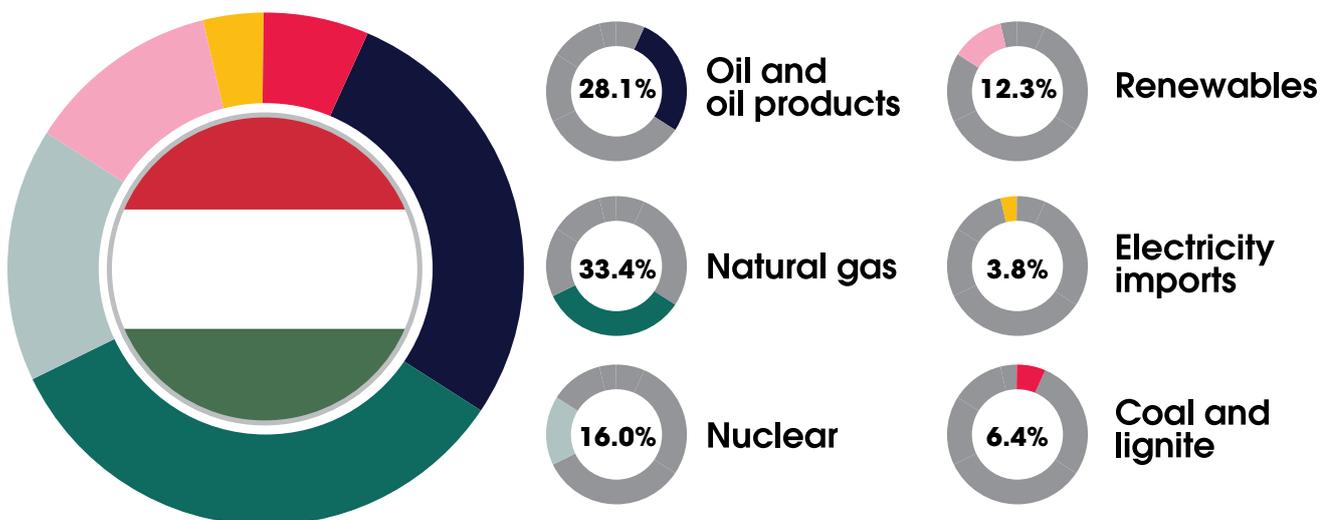


Chart 29: Hungarian energy balance³⁶

Large-scale energy efficiency programs in the building sector could reduce heating demand substantially. Given natural gas' role in meeting the heating needs of households and commercial buildings, this could save as much as 2 bcm/a in natural gas imports (around 25 percent of total demand).

In terms of decarbonization, the targets Hungary articulated in the 2019 NECP were unambitious. Its renewable energy target for 2030 is 21 percent, even though it had already reached 13.3 percent in 2017.³⁷ The target was to be achieved primarily by relying on biomass - the sustainability of which is questionable - and solar power, while the development of wind power generation was stopped by the government in 2016 for reasons that remain unclear.³⁸ **A key pillar of low carbon electricity in the country hinges on nuclear power. Paks II. will be composed of two new units, to be built by the Russian Rosatom, with a combined installed capacity of 2400 MW, that are scheduled to begin operations in the late 2020s, but delays in completion seem certain. The contract with Rosatom (estimated at 12.5 bn EUR at 2015 prices) comes with a respective credit line**

from the EU-sanctioned Vneshekonombank (10 bn EUR). The Hungarian government agreed to these in the mid-2010s prompting a backlash from various other political factions, but the government maintained its firm commitment to Hungarian-Russian nuclear and energy cooperation, at least in its communication. In reality, the project is still in its permit phase and had made relatively little progress by early-2022. The project consumed USD 0.8 bn so far, which is about 50 percent of what has been planned in the annual government budgets since 2014. Another form of long-term engagement between the two countries is the Hungarian gas LTSC (long-term supply contract) between MVM and Gazprom signed in September 2021, effective for a minimum of 10 years. The contracted volume is roughly equal to the demand posed by residential as well as small and medium-sized enterprises - 4.5 bcm/a. These LTSCs usually provide supply security and can also be taken as an informal business guarantee that Gazprom will not enter relevant national markets, allowing local traders to control them.

The contract with Rosatom (estimated at 12.5 bn EUR at 2015 prices) comes with a respective credit line from the EU-sanctioned Vneshekonombank (10 bn EUR).

I RELATIVELY EASY AND FAST DIVERSIFICATION POTENTIAL: OIL AND PETROLEUM PRODUCTS

The bulk of oil imports is transited through the Druzhba (“Friendship”) pipeline via Ukraine to Hungary. In addition, Hungary also imported various types of petroleum products through product pipelines until the late-2010s. The Druzhba pipeline feeds the Százhalombatta refinery, which was optimized to take on Russian Urals crude and a wider variety of oil products, now predominantly diesel.

It has an annual capacity of over 8 million tonnes with relatively high complexity, providing more flexibility in terms of production (Nelson complexity 10.6). It is owned and operated by MOL Group, a private company of which the Hungarian state also owns a substantial portion. MOL also runs two other refineries, one in Bratislava (Slovakia), with an even higher reliance on Urals input for diesel output,

and the Rijeka refinery (formally part of INA, Croatia), with better access to the Mediterranean crudes and diverse output.

Transit diversification is fully possible for all three MOL refineries through the Adriatic pipeline (see chart below) that connects them with the Adriatic Sea through Croatia. This was built in the 1970s and has been gradually reconstructed and modernized since 2011, adapting its capacity to current needs. Some adjustments and investments would have to be taken for all refineries to run on oil imported through the pipeline. The pipeline, however, has been barely used for technical reasons: its operations are more costly and more complicated than imports through Druzhba. Its maintenance was therefore to meet emergency needs and increase bargaining power vis-à-vis Russian oil companies during negotiations.

Transit diversification is fully possible for all three MOL refineries through the Adriatic pipeline (see figure below) that connects them with the Adriatic Sea through Croatia.

Substituting the Urals for their diversified imports is challenging, but not unattainable. The imported oil would have to be blended and/or refinery operations need to be reoptimized. The former is easier but requires more fuel tanks for mixing and blending various grades of crude. Reportedly, it would take 2-3 years to construct the necessary infrastructure, but its costs are unclear. MOL states such an investment would cost around EUR 0.5 bn; however, independent experts believe that the efforts and period needed for transition are overstated by MOL.³⁹

Another factor shaping the output and activities of these refineries is the decreasing supply of Russian petroleum products, now notably diesel to the European market. This would now be likely to be replaced by US exports to North-West Europe, while CEE refineries would have to respond to the demand call by increasing output. This requires increased crude imports through the Mediterranean, but questions arise about whether there is enough available supply at reasonable prices (tanker logistics are much more costly than pipeline).

Oil import costs would increase in all oil sanction scenarios. MOL has contracted tankers and engaged in new contractual relations with non-Russian suppliers. JANAF, the Croatian operator of the Adriatic pipeline, has a monopolistic position over transit fees, making the use of infrastructure relatively expensive (and politically dependent) and it would have to invest moderate sums to allow for enhanced capacity to meet newly emerging demand. Importing various crudes through the same network requires more coordination and better timing as well. Another upward push on prices would likely come from increased demand for crudes to substitute the Urals in the Mediterranean. Russian suppliers are likely to offer price discounts, broadening the Urals spreads vis-à-vis other grades, making the relative costs of diversification even more painful for MOL. In the current situation (early May, 2022) the Urals - diesel crack spreads rose to 35-40 USD, 6-8 times higher than the historical average.⁴⁰ MOL would also have to divest Russian assets, which are, however, quite minor.



Chart 30: Oil pipelines in CEE⁴¹

Total construction costs are minor and similar measures have been taken on several occasions in the past. Nonetheless, they require time (up to 1.5–2 years). Diversification can be gradually introduced. Variable costs are likely to grow due to several issues (e.g. more complex logistics, severe competition in the Mediterranean markets), but now notably because of shrinking cracking spreads. Every dollar lost on the spread between the future Urals and the average crude import price causes an approximately USD 44 million decrease annually in the profitability of the Százhalombatta refinery and a loss of more than USD 80 million for the entire MOL Group (including Slovnaft). Opportunity costs are high in the coming years in the unlikely event that Urals trade at current discounts - 10-25 USD per bbl spread to Brent. As a point of comparison, MOL Group's total EBITDA is around USD 3.5 billion. These costs can also be passed over to consumers.

Hungary is likely to trade its veto right for EU financial support in the latest, 6th sanction package. From one side, it is certain that, with the original proposition of the European Commission – including a 2 years derogation – Hungary (and many other CEE countries) would suffer disproportionately from a possible ban on Russian oil. On the other side – unlike for natural gas – a ban of this magnitude would not endanger the supply security of the country but would undercut MOL's margins. With

cracking Urals-Brent spreads, the state oil company is making significant extra profit, possibly enabling the state to levy a special tax on the company to – at least partially – fill government budget gaps. MOL made about USD 0.4 bn extra profit on the cracking spreads. The longer the war is ongoing and supply lines remain unhurt, the more extra profit MOL makes. Thus, it is highly unlikely that Hungary will accept the EU ban on Russian oil unless pipeline transportation is exempt. Pipeline transports account for one-third of total Russian oil imports to the EU.

“Hungary (and many other CEE countries) would suffer disproportionately from a possible ban on Russian oil. On the other side – unlike for natural gas – a ban of this magnitude would not endanger the supply security of the country but would undercut MOL's margins.”

I NATURAL GAS: PROGRESS WITH AN OPEN-END

After the 2009 Ukraine-Russia supply crisis, the Hungarian and almost all regional national gas transmission networks were upgraded so that they could respond to a partial supply cut from the East; however, these are all pipelines that are not paired with supplies.⁴²

Hungary has also tapped into international LNG markets when state-owned MVM also booked approximately 1 bcm/a import capacity at the Krk LNG import facility for seven years, until the 2027/28 gas year. The country made progress regarding its supply situation. Domestic production was around 12.8 percent of total consumption in 2020, remaining slightly above 1.5 bcm/a.⁴³ Hungary cut back its long-term imports provided by Gazprom to 4.5 bcm/a, which roughly covers administratively priced residential demand. It also contracted LNG supplies from various US companies and Shell, which it could import through Krk LNG. Reportedly, a considerable portion of this was physically swapped with Gazprom for pipeline imports. This could have been beneficial for Hungary because LNG imports are hectic and are more difficult to manage in terms of cash flow, too. The remaining import volumes (2.5–3 bcm/a) are sourced from short-term and spot contracts secured by a diverse set of traders.

By far the cheapest mode of diversification would be to utilize existing pipeline interconnections and use these to tap into non-Russian markets. Large-scale, reliable imports through Central Europe from Poland or Germany would require that countries through which the gas flows diversify their sources and adapt their networks. This is unlikely to happen until 2025 and whether volumes will be available remains highly contingent. The same goes for imports through Italy, where the Venice LNG import facility (7.6 bcm/a) offers a geographically proximate alternative to Russian deliveries. For this to become a viable option, Italy and Austria would have to replace Russian gas partially, reverse flows where necessary, and the import terminal would need to have available capacity. A minor interconnection planned with Slovenia before the war could support such endeavors, but this was predominantly

planned to balance demand rather than supply markets.⁴⁴ As such, this option is not impossible but faces several hurdles. Another option is to utilize the Balkan Stream pipeline, connecting Hungary with Bulgaria (and Turkey). Both Azeri and LNG (via the terminal in Alexandroupolis, Greece) are accessible through this route. Beyond pipeline capacity bottlenecks, regulatory issues, and the lack of (quickly) available supplies, ownership issues impede this option. The pipeline is partially owned by Gazprom, which raises questions about contractual relations and whether engagement would be possible. While the EU acquis can be enforced in the EU Member States, which includes the need to open pipeline capacities to third-party suppliers, the Serbian section is not subject to such regulations, offering a point of intervention for Gazprom to limit the diversification away from Russian gas. This limits the potential of diversification through this route. Another supply option that could reach Hungary's southern border is Romania's development of Black Sea offshore resources. This remains highly attractive but unlikely, and certainly not available until 2027, even though the Romanian Parliament seems to be moving towards a resolution over the legal gridlock that weighed on the project in recent years.

A full shift away from Russian gas remains unlikely until 2027. What seems to be reasonable and technically possible is a more thorough overview of import options through southern routes, now notably via the Balkan Stream and Krk LNG. Even if these are in place, the price will remain a contentious issue.

Expanding LNG import capacities through Croatia constitutes a costlier, but less complex way of securing additional access to global markets. The current floating storage and regasification unit (FSRU) has a capacity of 2.6 bcm/a, which can be slightly upgraded to 2.9 bcm/a, although some have suggested that its maximum capacity could be as much as 3.5 bcm/a. The second phase expansion could boost capacity to as much as 4.4 bcm/a for nearly 500 million EUR. It is unclear who would provide the funding for such upgrades. The European Commission did not include this proposal in its Projects of Common Interest (PCI) list before the war, but governments may look to this facility to obtain support.⁴⁵ Relying predominantly on the Krk facility would require a fundamental reconsideration of past planning and may lead to a capacity expansion to 6-10 bcm/a to cover regional needs (even more by including potential flows to Ukraine). Easy access to additional FSRUs will be constrained by demand for the technology from other European importers, now notably Germany. Moreover, constructing land infrastructure takes considerable time, which would now be likely to extend beyond the 2027 timeframe.

A full shift away from Russian gas remains unlikely until 2027. What seems to be reasonable and technically possible is a more thorough overview of import options through southern routes, now notably via the Balkan Stream and Krk LNG. Even if these are in place, the price will remain a contentious issue. The pressure to maintain low utility prices in CEE and Southeast Europe limits what the countries are willing and able to pay for energy carriers, which will become an especially important issue if a large-scale Russian gas-to-LNG shift were to occur, tightening global LNG markets. The focus on global supply is therefore key or, as discussed below, there is a need to emphasize alternatives (e.g. renewables and energy efficiency) to an even greater extent. **Nonetheless, possibilities to reduce reliance on Russian gas should be revisited once the German, Polish, and Italian diversification plans become public and their effects measurable. This should only become clear by 2024.** The European Commission’s technical and financial support will be crucial for triggering regional network investments as well as planning and coordinating objectives to accelerate diversification.

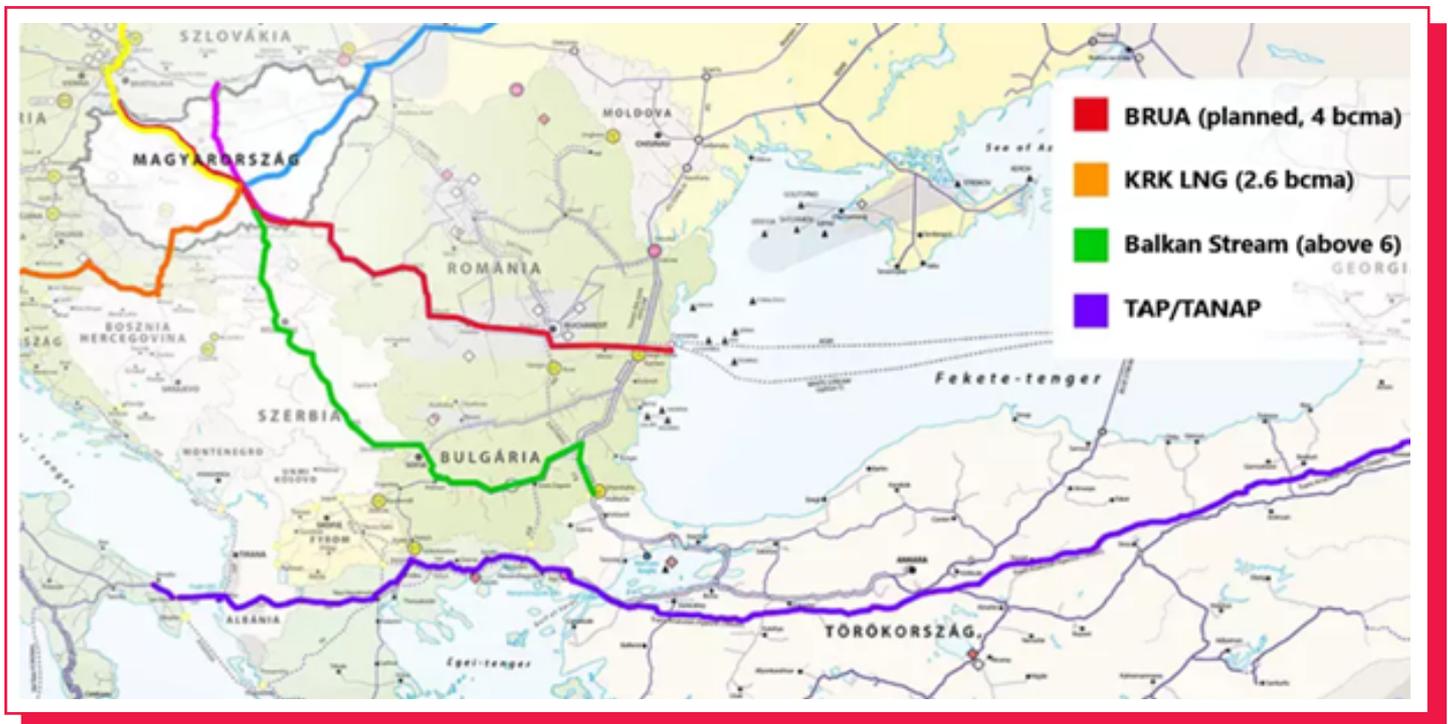


Chart 31: Natural gas pipelines in CEE / SEE⁴⁶

Natural gas diversification can be implemented through various scenarios.

The Southern route: imports through the Balkan Stream. The infrastructure is ready, baseload flow is optimal, and no further investments are needed. While the costs are zero, there are several legal hurdles regarding contractual relations (capacities are primarily contracted by Gazprom), further complicated by the fact that the pipeline crosses non-EU territory (Serbia). Supplies are also questionable, since both Azeri natural gas and LNG through Alexandroupolis are theoretically accessible but available volumes are likely to be minor. In an optimal scenario, alternative supplies could reach up to 2 bcm/a, but these prospects are contingent.

The LNG option: Krk expansion. This requires a minimum expansion of 4.5 bcm/a of Krk LNG's current import capacity and full reversal of default flows - HU-HR to HR-HU). The construction costs for the current FSRU (2.6 bcm/a) were EUR 233.6 million and finalized in 2021, practically implemented in two years (after 6 years of preparation). While these costs were rather extraordinary - partly because of EU conditions for support - the potential expansion will proceed in a setting where there is a high demand for LNG regasification infrastructure. Accordingly, the total costs are expected to be well over EUR 500 million with additional new FSRU units and storage tanks on the ground. It could theoretically be operational by 2025. If Ukraine is also to be supplied through this route, costs and design capacities need to be upgraded considerably. This is the least complex, and now reliable option.

Western reverse flows successful import diversification in Germany and Italy by 2025 and a shift to supply eastern Europe from central and southern Europe. It does not require investments by Hungary, only minor modifications in the domestic network to facilitate imports through its western borders. Nevertheless, this scenario remains highly contingent, since it depends on steady progress in a handful of countries as well as free LNG import capacities on the Atlantic and Mediterranean shores.

Building insulation and increasing heating efficiency. Estimates on Hungary's potential and especially the timeframe in which these can be implemented vary widely. In 2020, MEHI (Hungarian Energy Efficiency Institute) projected a 24 PJ annual efficiency gain in final consumption

by 2030 at the total cost of 4800 bn HUF (13.7 bn EUR at 2020 prices) through deep retrofitting programs.⁴⁷ Calculating the transformation costs and losses, this adds up to roughly 10 percent of the total annual gas consumption (a total of 366.4 PJ in 2020), which equaled 1 bcm/a. The import costs of this volume vary widely. Before 2019, when natural gas remained below USD 300 per MWh, the annual gain was around EUR 250 million. More recent prices suggest that this has doubled to more than EUR 500 million at least. It is important to note that such a deep building energy retrofit program would boost the local construction industry, possibly prompting economic growth, and thereby decreasing the macroeconomic costs of the program substantially. It is highly questionable whether the Hungarian construction industry can implement such a large-scale and complex program that requires an extensive (skilled) laboratory force in the given timeframe.

If Ukraine is also to be supplied through this route, costs and design capacities need to be upgraded considerably.

RES expansion: a high number of variations with different impacts and technological hurdles. It is important to underline that the RES expansion is underway independent of efforts to diversify away from Russia and cannot be boosted easily in the given timeframe. The solar-centric path will reach its limits quite soon and will have to be complemented with further action. Network flexibility and balancing issues are critical for further progress. 1500 MW of new gas-based generation capacities need to be added to the grid beyond 2025 at an estimated investment cost of 1.3–1.5 bn EUR to allow solar capacity to reach the target of 6500 MW by 2030. Alternative options would be a combination of energy storage, digitalization, wind power additions, and demand-side management, but estimating the costs of these is simply impossible.

ENERGY POLICY IN TROUBLED WATERS: THE CASE OF NUCLEAR POWER

Domestic nuclear power generation is important for Hungary, but Russian technology does not seem to be avoidable. Currently, viable alternative technology is gas-based; however, this would seriously increase the country's reliance on Russian gas imports. The 2000 MW Paks nuclear power plant provided 46 percent of Hungary's total domestic electricity generation (36.8 percent of total demand) in 2020.⁴⁸ The permits of the four blocks allow for an operational lifetime of 50 years and will expire between 2032 and 2037. Substituting these units is at the top of the Hungarian energy policy agenda. The Hungarian government concluded a deal with Rosatom in 2014-2015 to build two new nuclear blocks with a combined installed capacity of 2400 MW at the same location (Paks II.). The project is in the permit phase, which is a task for the Hungarian Atomic Energy Authority. The Authority was set to issue a decision in late 2021, but this has been delayed. **The Russian-Ukrainian war raises very serious doubts as to whether Paks II. remains feasible. Besides the sanctions, technical feasibility issues arise too.** Therefore, two interrelated questions have to be answered within a reasonable timeframe, certainly before 2027: first, whether the contract signed can be enforced and thereby remains valid; second, what the government will do if the agreement is voided.

Domestic nuclear power generation is important for Hungary, but Russian technology does not seem to be avoidable. Currently, viable alternative technology is gas-based; however, this would seriously increase the country's reliance on Russian gas imports.

The Paks II. expansion project was not directly sanctioned at the time of writing, but several indirect sanctions have affected its progress. The crediting organization, Vnesheconombank (VEB), was banned from the SWIFT system and affected by other sanctions. In light of the hostilities, Western subcontractors (e.g. GE and Siemens) are likely to be unwilling to participate in the project. The construction of this scale and complexity is simply unimaginable with the current limitations on financial issues, travel, transport, etc. Accordingly, an early start on the project in the coming years can be ruled out and it is highly questionable whether relations between Russia and the “West” will improve in the foreseeable future to allow for its smooth progression. Withdrawing from the project remains a difficult task for the Hungarian government for legal and political reasons. Legally, Rosatom may be entitled to sizable compensation, making this a costly venture.⁴⁹ Politically, it may cause a severe deterioration in Hungarian-Russian relations, even if their significance has been sharply decreasing. The government has also made Paks II. a prominent project; withdrawing from it would lead them to lose face among his electorate.

The Russian-Ukrainian war raises very serious doubts as to whether Paks II. remains feasible. Besides the sanctions, technical feasibility issues arise too.

The difficulties in withdrawing from Paks II. have ushered in time-consuming and ambiguous behavior, where the project is effectively frozen but not formally canceled. This may continue while a critical decision regarding its substitution does not become imminent. By far the cheapest and now likely substitution for Paks I. is the extension of its permits by another 10 years, until 2042–2047. This is a technical matter, a rather common way out of similar problems in Western countries.⁵⁰

Respective investigations were undertaken after 30 years of operations, delivering better than expected results. Thus, the 20-year extension was granted relatively swiftly in the early-2010s. These lifetime extensions require certain inputs from Rosatom and prolonged cooperation in terms of fuel deliveries, management, and technical support, but this could be a possible way forward.

By far the cheapest and now likely substitution for Paks I. is the extension of its permits by another 10 years, until 2042–2047. This is a technical matter, a rather common way out of similar problems in Western countries.

Contracting with other suppliers to complete Paks II. is not a feasible option in the current decade. Recontracting in some form was an option informally raised by experts involved in the Hungarian nuclear lobby after the outbreak of the war. It seems to be highly doubtful whether a project

of such magnitude can be “re-contracted”, especially in the 10-15 years while Paks I. is still running. French nuclear technology might be a possible solution, but experts say their current capacities are far from their past performance. Complexity is also an issue. The only theoretical exception for recontracting would be small modular reactors (SMRs), even though the technology is in its infancy, while the industrial and regulatory frameworks do not yet exist for these. This option has not yet surfaced in Hungarian public discourse, unlike in Bulgaria and Romania.

The non-nuclear alternative to substitute Paks I. would require increased inputs from all other fuels, including natural gas generation, renewable-based production, and electricity imports. At the moment, this goes against other energy policy objectives of the government. In the 2019 NECP, it declared the goal to decrease gas import dependence to 70 percent from 80–85 percent and limit electricity imports to 20 percent of demand from 32–33 percent by 2030.⁵¹ It also effectively caps renewable expansion by excluding the growth of the wind sector. It has to reconsider all these assumptions if it phases nuclear energy out of its energy mix during the 2030s. Consequently, the government is expected to turn to the non-nuclear scenario only as a last resort.

I IMPORTANT, BUT NOT SILVER BULLETS: ELECTRIFICATION AND RENEWABLES

The Hungarian NECP aims to achieve energy security, affordability, and decarbonization based on a mix of nuclear and renewable energy.⁵² These inputs, even if Hungary radically boosts them, will only be a modest contribution to diversification efforts in the 2020s. The NECP assumed their increase by roughly 8 percentage points in the energy mix, while approximately 70 percent of Hungarian primary energy would have to be supplied from alternative non-Russian sources in a full diversification scenario.

Hungary has an electricity system based on nuclear, natural gas, imports, lignite, biofuels and waste, and solar photovoltaics, with their relative weight following that order. Uncertainties linger over the power fleet. Besides the future of the Paks II. expansion, the potential phase-out of the Visonta lignite plant (900 MW), originally and informally planned by 2025, may boost natural gas generation or imports. Some measures, partly related to these concerns, have been initiated. Now notably two new gas-power combined cycle gas turbines (CCGTs) with approximately 1500 MW capacity are set to come online by the mid-2020s. Altogether 2000 MW of new gas-fired

generation may be added to the grid in the next decade, although the operation is set to be costly if high gas prices are set to remain in the future. It is important to underline that this volume will not boost the existing total installed capacity within the country, but only replace the outdated lignite (Visonta) and gas-fired (Tisza-II) units. The domestic generation fleet remains relatively undersized, especially in light of summer peak demand climbing above 7 GW and growing annually at a 2 percent rate.

Wind is not included in the energy system as a quasi-baseload source of electricity that could complement solar PV and allow it to balance the grid. This appreciates the value of natural gas-based balancing, as only a handful of relatively small electricity storage units have been linked to the electricity grid.

Solar PV has received the most attention in recent years, given that installed capacity has increased from below 1 MW in 2010 to 2754 MW in Q3 2021.⁵³ This growth came on the back of many factors, now prominently a net-metering system that supported the boom in household-sized installations, which grew to 689 MW for households and 334 MW for public buildings. Growth has been further boosted by support schemes. Until the end of 2016, a feed-in tariff system provided an administratively set price, which was replaced by a tender scheme in 2017. While the latter was slow to take off, the two support schemes contributed to 1731 MW of installed capacity materializing in the country, and, the boom continues. Apart from the residential sector,

where fixed end-user energy prices distort the market, high energy prices, and the general push from several actors to green their portfolios, investment in solar installations continues. This can support the shift away from natural gas-based generation, which made up 26 percent of domestic output.⁵⁴ Adding additional renewables could pressure spark spreads, which currently lead to more efficient power plants, such as the Újpest Power Plant or Gönyű Power Plant to run at 62 percent and 60 percent utilization rates. That is, they effectively played the role of providing baseload generation, which can be curtailed with further renewable additions.

Solar PV can continue to substitute natural gas to some extent, but some issues linger when considering its continued expansion. The NECP set a 6500 MW solar capacity target by 2030. Sectoral criticism was broad, loud, and extensive against these targets, as neglecting balancing needs makes reaching capacities above 4000 MW difficult. The grid's ability to absorb new connections, limited focus on encouraging energy communities and new auxiliary technologies, land-related issues, and endemic corruption in the sector all constrain its growth.⁵⁵ Growth is robust, but it has even greater potential. These need to be urgently addressed to allow for the continued boom in the sector, which is not only essential to meet Fit-for-55 targets, but to allow for the substitution of much-imported fossil fuels as possible. Limiting imports is a declared objective of the government per its NECP, but, in practice, action to counter these impediments has been slow. The renewable energy portfolio is also skewed towards solar PV. The country has had little wind generation capacity since a government decree banned new wind installations in 2016, possibly for political reasons. Wind is not included in the energy system as a quasi-baseload source of electricity that could complement solar PV and allow it to balance the grid. This appreciates the value of natural gas-based balancing, as only a handful of relatively small electricity storage units have been linked to the electricity grid.

I THE NO BRAINER THAT HAS BEEN SLOW TO TAKE OFF: ENERGY EFFICIENCY

Natural gas also plays a focal role in heat production, which especially pertains to space heating in households - half of the total natural gas demand for the sector. Renewables already play a substantial role in the heating sector, since residents in rural areas tend to heat their homes with biomass. The sustainability of this is highly questionable since the origins of such biomass are often unclear and do not necessarily originate from sustainably managed forests. The relative portion of this can be boosted if its use is increased for space heating while the energy efficiency potential of buildings is acted upon (see below). A number of district heating systems can also turn to renewable biomass from natural gas. Large cities, such as Szeged and Miskolc, have turned to utilizing geothermal heat at their disposal. Geothermal is abundant in the country, but its relatively low temperature makes its incorporation into the district heating system challenging.⁵⁶ However, in Budapest, for instance, the existing system optimized for high-temperature heating can draw on geothermal energy, but can potentially be further heated with waste, biomass, or natural gas. This would substantially reduce the natural gas intensity of the heating system. Nevertheless, geothermal possibilities only offer a partial solution to reduce dependency for physical and financial reasons.

Waste is also a key fuel that such district heating systems could utilize, but there is a need to provide the initial investment to develop the required capital-intensive infrastructure. Budapest is set to undertake such a venture, but the practice can be considered in other areas as well. In parallel, there has been a rising interest in heat pumps, which can help replace natural gas-based heating systems in newly built urban dwellings and households. A key segment that remains to be addressed is the large structures that host tens of apartments in urban dwellings that feature natural gas-based heating systems. The technological alternatives in these cases are scarce, with the substantial expansion of the district heating system or a need for a deep renovation of these dwellings to make them suitable for a new form of heating, such as heat pumps.

Natural gas also plays a focal role in heat production, which especially pertains to space heating in households - half of the total natural gas demand for the sector.

There is ample potential to reduce energy demand in the residential and commercial space heating segments in Hungary. This would reduce energy requirements, smoothing the transition. An energy efficiency program would reduce demand for space heating by approximately a third in the residential sector, but there has been a strong reluctance to introduce sweeping measures. When EU funds were allocated for the cause in the 2010s, the Hungarian government unilaterally reallocated sums provided for household energy efficiency measures to public buildings. While this also reduced energy demand, it also posed a less complex endeavor to execute, in addition to which it offered the opportunity to distribute funds centrally, in relatively large sums, which allowed for greater corruption opportunities. Market-based energy efficiency programs and investments have also been scarce to materialize since energy prices paid by residential consumers in Hungary are extremely low. There is no incentive to save energy or take on further investments since those would not be recouped. Pressure to take action in this domain is mounting in order to reach EU targets and limit consumption, which poses a strain on the government budget.

There is ample potential to reduce energy demand in the residential and commercial space heating segments in Hungary.

I KEY TAKEAWAYS FROM ENERGY DEPENDENCIES

In most European countries, energy security considerations have lost ground to decarbonization efforts in the past few years, while in Hungary low utility prices have become a political tool. The Hungarian government did not fully adopt the decarbonization of energy security agenda. It pursued a hybrid strategy that could not alter a number of mainstays in Hungarian (energy) politics: the future role of nuclear power, maintaining utility prices, and the ban on wind power. Furthermore, several underlying factors confine the government's scope of action, including good relations with Russia, alongside systematic and aggravating tensions with the European institutions and mainstream EU policies. These make a dedicated Russian fuel diversification effort both difficult and unlikely, turning Hungary into a potential laggard.

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In most European countries, energy security considerations have lost ground to decarbonization efforts in the past few years, while in Hungary low utility prices have become a political tool.

At the same time, past experiences offer some prospects. Diversification is achievable except for nuclear fuels. Full recontracting of oil and gas supplies from non-Russian producers is the fastest way. Further variable costs may arise from new logistics lines and the loss of Urals discounts. **All in all, diversification is cheaper than decarbonization**

by an order of magnitude. Still, some synergies will be established with the 2030 climate goals, further decreasing the costs. Hungarian stakeholders showed a propensity to act on energy security considerations once financial support was made available. The “show me the money” principle will likely work in this case as well, since some measures (such as the construction of new technical infrastructure for oil diversification) are relatively cheap and easily attainable. The Krk LNG terminal also offered a case where EU-backed solutions can even facilitate regional cooperation between antagonistic partners.

Another potential push may come from a need to reconsider policies due to structural factors. Even if the Hungarian government remains unwilling to change the cornerstones of its energy policy, market and international circumstances will force it to do so. Preserving low utility prices in the residential sector would require additional government subsidies adding up to 2 percent of GDP a year if current price levels sustain. The Paks II. project has also lost much of its viability. The government may try to maintain the current approach or partially adapt its plans, but it will be forced to become much more attentive to alternative solutions, including energy savings, renewables, and so on.

In the longer run, beyond 2025, the regional setting also may force the government to change its policies. Once the regional flows and trading patterns have changed, it may become increasingly difficult to pursue Russian fuel imports. There may also be growing pressure from NATO and the EU on these matters, which could increase the likelihood of full import bans. The continuity of Hungary's energy policy may be constrained and it will have to take additional measures to adapt to a changing reality.

6. EXTERNAL FINANCING NEEDS FOR ENERGY DIVERSIFICATION

In our concluding chapter, we will analyze how much external financing the Hungarian economy may need over the next two years, to start the reduction of energy dependence on Russia. It is important to stress that figures in this section only present financial needs; the source of coverage is not assessed. In other words, we performed our calculations as if all investments were to be made by the government at the expense of the central budget, but this is highly unlikely as special EU transfers are likely to be available for the country.

The rapid change in the international environment has placed more uncertainty in the estimation process than usual, so the figures presented here can only be considered realistic if the following assumptions will not change dramatically:

- 01** The government will not change its policy on residential energy tariffs.
- 02** The government agrees with the EU on the Rule of Law mechanism, which alleviates the need for external financing of the budget through the inflow of EU funds.
- 03** The Brent-Urals cracking spread will remain constant. The time required for the changeover is difficult to estimate; we calculated a changeover of an additional 30 percent for the first year and 60 percent for the second year (currently we are on a 30 percent level)
- 04** The Russian and Chinese geopolitical projects presented in the international dependency chapter of this study are not implemented.

- 05** Nominal GDP growth in 2022 and 2023 will be 11.3 percent and 8.7 percent, respectively, which can be considered a conservative approach.
- 06** Russia will be compensated by the Hungarian government for its withdrawal from the Paks II. project (in 2023), while the capital increase planned for 2022 will no longer take place.
- 07** The nuclear energy-free investment scenario estimated in the National Energy Strategy until 2050 will be implemented by the government by 2030. This will increase the share of renewables in electricity generation to 35 percent.
- 08** The LNG terminal in Krk (Croatia) will be upgraded to 4.5 billion cubic meters in 8 years.
- 09** The government starts an insulation and heating efficiency program, reducing gas demand by 2 percent in 2 years.
- 10** 1500 MW of new gas balancing capacities will be added by 2025 to the energy grid.

We perform our calculations in the deficit of the budget. In our baseline scenario, we have accounted for all expenditures and revenues without the costs of reducing energy dependency. This is considered to be the baseline scenario (shown in red). The energy dependence reduction path is shown by the dashed line. This would generate an additional spending of 2.8 percent of GDP this year, equivalent to USD 4.7 billion. In 2023, extra spending will be a significant additional burden on the budget, resulting in a deviation of 7.6 percentage points from the baseline (USD 13.9 billion). This would create an overall deficit of

11.1 percent, which would easily exceed the record deficit of 2020, due to the coronavirus epidemic. Such a deficit is unsustainable, given that the yield on Hungarian bonds has already tripled compared to 2020 and the debt management

authority is no longer able to securely raise additional funds from internal sources. A deficit of this magnitude would also lead to a deterioration in the debt rating, which would also create additional financing difficulties.

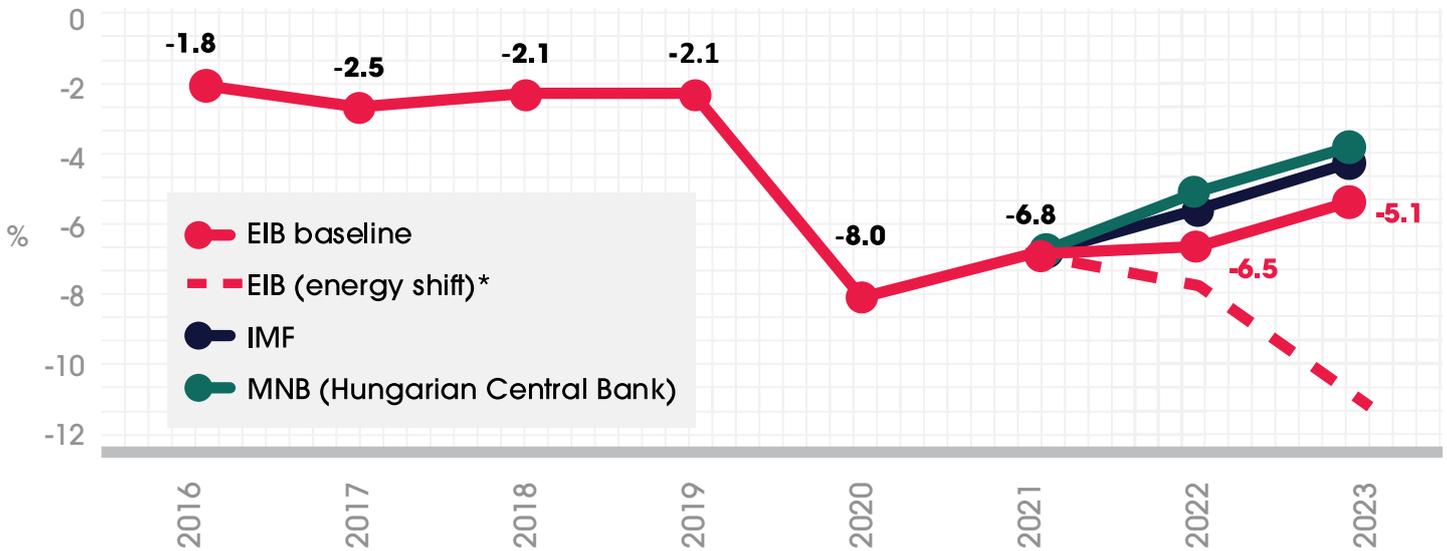


Chart 32: Budget deficit as a percentage of GDP⁵⁷

As Hungary is a small and open economy, it will be of paramount importance for investors and credit rating agencies to return to an equilibrium deficit trajectory as soon as possible. In our figure, we approximated this with the forecast of the Central Bank of Hungary, which overlaps with the government’s official forecast. Based on our estimate, without an energy independence scenario,

the Hungarian budget may need additional funding of approximately 3 billion dollars this year and the next, while this amount will increase to USD 4.7 billion and USD 13.9 billion, respectively, to address energy dependency. In a longer period, funding for energy diversification efforts could amount to 4 percent of the GDP per year, which is difficult to manage without foreign funding.

External financing needs (compared to balanced path)				
		2022	2023	TOTAL
% of GDP	Baseline	1.6	1.6	3.2
	Energy shift	2.8	7.6	10.3
bn USD	Baseline	2.8	2.9	5.7
	Energy shift	4.7	13.9	18.6

Table 2: External financing needs of the Hungarian budget⁵⁸

7. CONCLUSIONS

In conclusion, resolving the energy dependence of the Hungarian economy on Russia requires significant external financing, which the country cannot solve on its own. In addition, the estimate presented above can be considered conservative, as it is based on currently known prices, but these may increase significantly (beyond the possibility considered in the calculation) in the future. It is also questionable to what extent the supply chains that can be considered in the case of resolving energy dependence can satisfy Hungarian demand and at what price. As a result, we may conclude that Hungarian Russian energy dependence cannot be eliminated in the short term. At the same time, government steps toward decoupling are currently insufficient, which is why it is necessary to increase the resources spent on renewables, as well as the need to set up significant gas balancing capacities. Due to the high investment demand, significant structural change can only be imagined in a decade-long perspective, with a substantial need for external financing.

Resolving the energy dependence of the Hungarian economy on Russia requires significant external financing, which the country cannot solve on its own.

External financing might come from various sources, but EU funding is by far the most advantageous solution for Hungary. To have a better understanding of the situation, we need to examine the past few years of the government's communication on external funding.

The current government made large political capital by quickly (in 8 years) overcoming the IMF-World Bank-EU loan, borrowed in 2008. As such, it is highly unlikely that the government will use these options again. In the meantime, the government stressed that the country is, in any eventuality, entitled to the EU funds (most notably regional development and social funds) because – upon its accession in 2004 – Hungary committed to open its market to the west in exchange for monetary, non-refundable support. The anticipated Hungarian veto on the EU ban on Russian oil imports can be considered an exercise of pressure on the EU, where the community will have to choose between financing its most deviant member state to introduce the oil ban on Russia or to tarnish its reputation by postponing (or alleviating) the sanction package. Alternatively, targeted funding for insulation projects could be acquired from the European Bank for Reconstruction and Development (EBRD); however, this has a higher cost than non-refundable EU transfers, and would only partly cover financing needs. An IMF loan is not an option, mainly for political and financial reasons, too (i.e. possible downgrading). Bilateral loans might also be considered China seems to be the only viable option but such a package would come with serious political terms as well. All in all, EU funds – currently held by the Rule of Law mechanism – seem to be the only viable source of external financing.

External financing might come from various sources, but EU funding is by far the most advantageous solution for Hungary.



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- 1 Source: Eurostat and Equilibrium Institute
- 2 Source: World Bank and Equilibrium Institute
- 3 Source: Eurostat and Equilibrium Institute
- 4 Source: UN and Equilibrium Institute
- 5 Source: Eurostat and Equilibrium Institute
- 6 Source: Eurostat and Equilibrium Institute
- 7 Source: Eurostat and Equilibrium Institute
- 8 Source: World Development Indicators and Equilibrium Institute
- 9 Note: * Average of 5 countries with special benefits for FDI: The Netherlands, Ireland, Malta, Cyprus, and Luxembourg. Source: UNCTADSTAT and Equilibrium Institute
- 10 Source: UNCTADSTAT and Equilibrium Institute
- 11 Source: Eurostat and Equilibrium Institute
- 12 Source: Eurostat FATS statistics
- 13 Source: Equilibrium Institute based on company financial reports and HVG top 500
- 14 Hungarian Central Bank, 2021
- 15 Source: American Chamber of Commerce in Hungary (AmCham)
- 16 Note: Without outlier countries such as Costa Rica, Ireland, Luxembourg, or Mexico. Forward participation in GVCs: Domestic value added to foreign exports as a share of gross exports. Source: OECD-TiVa statistics and Equilibrium Institute
- 17 Source: ECB and Equilibrium Institute
- 18 Source: Government Debt Management Agency and Equilibrium Institute
- 19 Source: IMF and Equilibrium Institute
- 20 Source: Euronews and Equilibrium Institute
- 21 Note: The railway carriage making project is missing because there was no direct state financing involved. Source: Equilibrium Institute based on media information
- 22 Source: Equilibrium Institute from Stooq.com
- 23 Note: estimates made as a worst-case scenario, where we assumed energy-intensive industries will lose profits due to the fact they can be unable to pass on their input price shocks entirely to their customers. We also encompassed effects through the value chain. The magnitude of the drops presented in the charts can be interpreted as a maximum, theoretical effect. The real drop is expected to be much lower than these figures, but the rank order of impacted sectors is set to remain the same. Source: Equilibrium Institute calculations
- 24 Source: Eurostat and Equilibrium Institute
- 25 Source: MEKH and Equilibrium Institute
- 26 Note: * Equilibrium Institute for Hungary, IMF for all others. Source: IMF and Equilibrium Institute
- 27 Note: *preliminary data. Source: IMF and Equilibrium Institute
- 28 Note: *based on year to date data (estimates). Source: Eurostat and Equilibrium Institute
- 29 Based on data provided by the European Commission (2019).
- 30 Source: European Commission, Eurostat and Equilibrium Institute
- 31 Source: MNB (Central Bank of Hungary)
- 32 Politico, 2022
- 33 MEKH, 2022
- 34 MEKH, 2022

35 NECP (2019), p. 50

36 Source: Hungarian Energy and Public Utility Regulatory Authority (MEKH), 2022

37 NECP (2019)

38 Major (2021)

39 Népszava (2022) and Miklós (2022)

40 Great (2022)

41 Source: MOL Group, Logistics

42 The EU benchmark, the N-1 rule, applies (rule to substitute the largest import relation with others) for Hungary, enhancing import capacities from Austria (5.3 bcm/a), Slovakia (4.4 bcm/a), and Croatia (0.4 bcm/a + 6.6 bcm/a). The situation was further improved with the completion of the Gazprom-backed Balkan Stream pipeline from Serbia (over 6 bcm/a). This allowed Hungary to access Caspian and Middle Eastern resources, in theory. However, these are all pipelines that are not paired with supplies.

43 MEKH (2022)

44 B. Horváth (2021)

45 EC (2021)

46 Source: Hungarian Energy and Public Utility Regulatory Authority (MEKH)

47 Mehi (2020)

48 MAVIR (2021)

49 Bulgaria paid EUR 620 million for canceling the 2000MW Belene nuclear project with Rosatom. Sofia had to pay for the already manufactured appliances. Initially the project was set to cost around 4 bln EUR.

50 Katona et al. (2011)

51 NECP, 2019 p. 30

52 NECP (2019), p. 19

53 Szolnoki, 2022

54 MAVIR (2020)

55 eclareon, 2022

56 Tóth (2019)

57 Note: * cost and benefits of the following items: MOL loss due to Ural-Brent switch, LNG terminal expansion in Krk (Croatia), Canceling of the Paks 2 project, Building insulation program, Gas balancing capacities for renewable resources, renewables investments. Source: Equilibrium Institute estimates, IMF and Hungarian Central Bank

58 Note: balanced path = Hungarian Central Bank forecast. Source: Equilibrium Institute estimates

ABOUT US

The Equilibrium Institute is a future-oriented Hungarian think tank. We are writing political, economic, and cultural visions and policy proposals for Hungary. We are establishing an intellectual background to underpin the success of Hungarians in the rapidly changing 21st century.

We are discussing topics that are underrepresented in public discussions. These topics include robotization, the transforming labor market, the air quality and the pollution of freshwater, national identity and the role of communities in a society, the future of education, the country's economic take-off, or the changing world order.

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