

WHEN INTEREST RATES REPLACE SUPPORT: THE IMPLICATIONS OF THE EURO FOR HOUSING POLICY AND FISCAL POLICY

András Becsei – Zsombor Incze¹

ABSTRACT

In this paper, we examine whether the adoption of the euro can institutionally replace budget-funded housing subsidies in Hungary by creating a lower and more stable interest rate environment. By considering more than 130 years of institutional history in housing finance in Hungary, we demonstrate that the market-based availability of long-term, low-interest-rate funding is exceptional and has typically been linked to external monetary conditions (such as the gold standard) or extensive fiscal subsidies. By comparing data from euro area Member States in the region (Slovakia, Slovenia, Croatia) and Hungary, we use a difference-in-differences (DiD) analysis to examine how the interest rate offered by the Otthon Start Program (Home Start Program), introduced in 2025, compares to euro area mortgage rates. Our results suggest that the interest rate implied by the program does not differ significantly, in a statistical sense, from regional euro area interest rates. Therefore, our research shows that the adoption of the euro in Hungary is not merely a monetary policy issue in the strict sense, but can also be viewed as an independent housing policy tool, which can thus help mitigate cyclical and fiscal risks related to housing and its affordability.

JEL codes: E42, E52, G21, G51

Keywords: euro introduction, housing lending, housing policy, interest rate subsidy, institutional history

¹ *András Becsei* Vice President, Hungarian Banking Association; Deputy CEO, OTP Bank. Email: andras.becsei@otpbank.hu.

Zsombor Incze Ph.D. student, University of Miskolc; research associate, OTP Bank. Email: zsombor.incze@incze.hu

1 INTRODUCTION

Hungary operates one of the most active and complex state credit support systems in the European Union. The residential real estate credit (RRE credit) support system has been part of Hungary's "modern" mortgage lending system for decades; it is nearly coeval with the system itself. Government expenditures related to the funding of housing assistance programs have a continuous and long-term impact on the fiscal flexibility of the national budget due to the cumulative costs of the various programs.

All of this raises the question of to what extent the long-term sustainability of the domestic housing subsidy system depends on the budget's cyclical capacity, and whether there is an institutional solution that can ensure the subsidies' impact on the housing market without their fiscal costs. International experience shows that a low and stable interest rate environment is in itself a key factor in determining the affordability of home purchases; however, in Hungary, the sustained market conditions necessary for this have historically existed only during exceptional periods.

In this context, the question of introducing the euro is raised not only from a monetary perspective but also from housing policy point of view: is an external monetary regime able to ensure institutionally an interest rate environment that reduces the demand for state credit support and, thereby, the long-term burden on the budget?

In this paper, we examine this issue from several perspectives. In our bibliographic review, we present the findings of research on Hungary's potential membership in the euro area, and summarize experiences related to the adoption of the euro in the region, focusing on housing market aspects. Then we review the institutional history of housing financing in Hungary over more than 130 years, to demonstrate the conditions of access to long-term, low-interest funding for mortgage lending that was permanently available in Hungary. Finally, relying on an empirical difference-in-differences (DiD) analysis, we examine the extent to which the interest rate environment associated with the euro corresponds to that created by subsidised loans in Hungary.

Nevertheless, improving housing affordability does not depend solely on interest rates and government subsidies: restructuring the repayment terms of loans may also help ease the initial burden of repayment. Approaches have appeared in the literature that address this issue through aligning income trajectories with repayment profiles (Incze, 2025; Kovács-Nagy, 2020; Kovács-Pásztor, 2018). This paper does not deal with a detailed analysis of these product-level innovations, it rather focuses on the institutional role of the interest rate environment.

2 BIBLIOGRAPHIC REVIEW

2.1 Adoption of the euro in Hungary

The adoption of the euro has been on the agenda since Hungary joined the European Union. Apart from Denmark, all EU Member States are required to join the euro area; however, this requires meeting a number of convergence conditions. The most obvious advantage of euro area membership is that there is no need to exchange currency when traveling between member countries; furthermore, the use of a common currency makes it easier to live, work, study, or spend one's retirement years in other euro area Member States. The common monetary policy typically results in more stable prices; moreover, as the world's second most important currency, the euro is a widely used means of payment, including lending (European Parliament, 2025).

Many people discussed the adoption of the euro over the past few decades, and studies published on a regular basis had examined this matter from various aspects. Below, we summarized the most important related considerations, arguments, and counterarguments.

This paper does not pursue to present the macro-level arguments for adopting the euro, since this topic has already been extensively covered in the Hungarian literature. For this reason, we reviewed the positions in the literature exclusively along a few key considerations.

There seems to be a consensus in the literature that joining the euro area is not merely a "technical" issue, its effects extend far beyond the means of payment used in everyday payment transactions. For example, Bod (2012) interprets it as a "national strategy decision"; Czelleng (2018) refers to it as a strategic choice on economic, institutional, and social preparedness that requires a well-founded professional debate; while Palánkai (2020) considers it a "national interest." An early MNB paper (MNB, 2001) even defines the adoption of the euro as a strategic goal.

However, opinions on the adoption of the common currency have undergone significant changes over the past 25 years. The MNB's (2001) task-driven approach that anticipated rapid accession was replaced by condition-driven approaches, based on real convergence. The foundations of this theory date back to Mundell's (1961) theory of optimal currency areas (OCA), which assumes that a common currency can be operated in regions where labour mobility is high, implicitly expecting similarities in the structural elements of the economy, business cycles, and adjustment mechanisms. In this paper, we define real convergence as the process by which a less developed country catches up with the group of developed

countries in terms of productivity and per capita GDP, thereby creating the conditions necessary for membership in an optimal currency area.

As a consequence, meeting the Maastricht criteria is a necessary condition but does not suffice for the successful adoption of the euro and euro area membership. In their analysis of the challenges posed by the convergence process, Darvas–Szapáry (2008) argue that if a country lags significantly behind in terms of price levels and GDP per capita, it may be worthwhile to postpone the adoption of the euro. In addition, they point out the risks of excessive indebtedness associated with the adoption of the euro. According to the arguments put forward by Neményi–Oblath (2012), irrespective of a country's intention to join the euro area, it is in the country's interest to both meet the criteria and fulfil the other (external and internal) conditions for membership. In their opinion, it is not worth joining for the sake of credibility benefits, and a country should only abandon its own currency once there is a sound institutional framework in place, capable of managing potential equilibrium issues related to wage and lending developments.

Drawing on these critical observations, the topic of “Maastricht 2.0”, a revisited concept of the euro area emerged in the literature. Marinkás (2024) focuses on the legal and institutional aspects, Berta et al. (2020) more on financial stability, and Lars et al. (2016) approach the Maastricht 2.0 concept from the side of the euro area's macro-structural aspects.

However, Marinkás's (2024) finding provides a noteworthy background of domestic criticism of the Maastricht criteria. In fact, while examining the convergence reports from 2004 to 2022, he concluded that prior to 2014, there was not even a single year in which meeting the Maastricht criteria was actually realistic. Between 2014 and the onset of the economic impacts of the COVID-19 pandemic, the country met several criteria, but never all of them at the same time. However, due to the energy crisis that followed the outbreak of the Russia-Ukraine war, inflationary shocks, and the economic difficulties Europe has faced ever since, it still remains unclear whether these criteria can be met at all (Government of Hungary, 2024).

One of the most important arguments against adopting the euro is the loss of independent monetary policy, which, according to Neményi–Oblath (2012), could impair the crisis management capability. Deskar–Škrbić–Kunovac (2020) also point out the costs of giving up independent monetary policy for those EU countries that have not yet joined the euro area (the Czech Republic, Poland, Hungary, and Sweden). The theory of the optimal currency area (Mundell, 1961) itself is based on the premise that a floating exchange rate can serve as one of the main channels for adjustment in the real economy, which, under certain circumstances, can alleviate unemployment or inflation pressures.

However, Györfy (2023), upon analysing exchange rate matters during the period from 2001 to 2021, concluded that Hungary failed to capitalize on the benefits of an independent monetary policy, either during crises or during calmer periods. What is more, during periods of turbulence, domestic monetary policy actually amplified the shocks, rather than mitigating them. According to Györfy (2023), the benefits of having an independent monetary policy cannot thus be used to justify delaying the adoption of the single currency.

According to Palánkai (2020), the Hungarian economy has become so deeply integrated into the euro area that it has “de facto” become part of it. The dual currency system created in this way, nevertheless, is a suboptimal arrangement compared to actual membership in the euro area, since it prevents our country from taking part in shaping the future of the euro area.

The domestic debate on joining the euro is therefore lively, and over the past few decades it has shifted from time-based objectives to a criteria-based approach that considers economic maturity. However, some findings suggest that Hungary has not been able to sufficiently reap the benefits of an independent monetary policy even in the long term, even though it has, indeed, already become part of the euro area through deep integration. Therefore, maintaining the current dual currency system in itself brings less and less benefits.

2.2 Adoption of the euro and RRE loan interest rates in the countries of the region

Among Hungary’s regional neighbours and competitors, accession to the euro area has been partially achieved to date. The Czech Republic, Poland, and Romania use their own currencies, while Slovakia, Slovenia, Croatia, and, as of January 2026, Bulgaria have decided to adopt the euro. Although they are not part of the region in the strict sense, the Baltic states, as well as the two island countries, Malta and Cyprus, that joined the EU alongside Hungary in 2004, have also adopted the single currency.

In the present paper, when examining RRE loan interest rates, we selected countries from this narrowly defined region that share a similar geographic location, a shared historical background, and comparable socioeconomic structures, and whose membership in the euro area spans a sufficiently long period. Based on these criteria, excluding the island countries, the Baltic states, and Bulgaria (due to its short period of membership) we analyse the cases of Slovakia, Slovenia, and Croatia.

Slovakia

For example, Bod et al. (2020) analyse the case of Slovakia. It was determined that the successful adoption of the euro requires a broad political consensus overarching multiple government cycles. They highlighted that a significant portion of the adoption's economic benefits already become apparent during the preparatory phase, and that the benefits of the single currency are perceived to a greater extent by domestically owned, smaller companies than by foreign-owned, large companies. According to the conclusion drawn by Bukowski et al. (2023) that presents the Slovak example, joining a monetary union is highly recommended for a small, open economy. The greatest positive impact was revealed in GDP growth, but interest expenses for households and businesses also declined, which, in their view, was primarily due to the adoption of the euro. They mention bad timing as a country-specific drawback, which in the short term worsened the cost-benefit ratio. Nonetheless, both Bukowski et al. (2023) and Bod et al. (2020) evaluate Slovakia's adoption of the euro as a success.

Horvatova (2020) provided a comprehensive summary of the 20-year history of mortgage financing in Slovakia, with a particular emphasis on the role of the interest rate environment. Using econometric methods, she demonstrated that the sustained decline in mortgage interest rates played a significant role in the expansion of RRE lending. Meanwhile, in response to rising household indebtedness, the central bank decided to introduce LTV and DTI limits. She emphasized that, in the long run, the adoption of the euro and a stable monetary environment have supported the development of the mortgage market. Upon examining the impact of interest rate transmission, Klacso–Martino (2024) found that while mortgage and fixed-term deposit rates adjusted quickly to the post 2022 monetary tightening, overnight rates were particularly slow to follow market levels, improving banks' profitability only in the short term.

Overall, therefore, we see that in Slovakia membership in the euro area has led to consistently and predictably lower and more stable mortgage interest rates, while the central bank's interest rate transmission is rapid and mortgage lending exhibits significant interest rate sensitivity.

Slovenia

Of the 10 new EU Member States that joined in 2004, Slovenia was the first to adopt the euro, in January 2007. Weyerstrass–Neck (2008) associate the adoption of the euro in the country primarily with higher GDP growth, a higher GDP level, higher employment, higher inflation, lower budget deficits and state debt, and, at the same time, a deteriorating current account balance. In addition, they highlight the decreasing interest rates resulting from the decline in country risk

premiums. Clichici (2021) showed that, during the adoption of the euro, Slovenia successfully corrected its economic imbalances while maintained a remarkably resilient economy. By joining the euro area, it also succeeded in achieving convergence in GDP and prices. Following the adoption of the euro, monetary integration in Slovenia took place smoothly, amid low inflation and rapid interest rate convergence, as confirmed by comprehensive assessments by the European Commission and the IMF (European Commission, 2009; IMF, 2007).

According to Požlep's (2023) analysis, Slovenian RRE lending is risk-based, competitive, and transparently priced, with interest rate spreads reflecting the characteristics of the loan and the banks' capitalization. Although the paper does not directly examine the impact of the introduction of the euro, the EURIBOR-based pricing of RRE loans and the stable monetary transmission are signs of a well-functioning euro area credit market. This essentially suggests that, in the euro area interest rate environment, in the absence of fiscal interest rate divergence, interest rates will evolve in a stable manner, based on market (risk) factors, and with low volatility. Festic-Bohinc (2024) adds the nuance that, as part of the Eurosystem, non-standard monetary measures were also implemented in Slovenia, such as the Asset Purchase Program (APP) between 2014 and 2018, or the PEPP (Pandemic Emergency Purchase Program) related to the COVID-19 pandemic. They also emphasize that through stable monetary conditions the country's capacity for saving and investment has also strengthened, thereby increasing Slovenia's ability to finance its development from domestic sources.

Croatia

Croatia joined the euro area on 1 January 2023. Papers examining the inflationary effects of the adoption of the euro soon began to appear in the academic literature. It was established that the transition to the euro resulted in, at most, a moderate price impact concentrated to certain sectors, primarily in the case of services, in particular in the hospitality industry (Soric, 2024; Falagiarda et al., 2023).

The effect of euro area accession on lending had already been the focus of academic and central bank research well before actual accession. It is worth noting the finding of Kunovac-Pavic (2018) stating, even prior to Croatia's accession to the euro area, based on the experiences of other euro area members that euro area membership generally results in lower borrowing costs and better credit ratings (even when controlled for macroeconomic fundamentals). At the same time, in response to the risk of a potentially overheated credit market, the Croatian authorities introduced borrowerbased prudential measures to restrict retail lending even before the adoption of the euro, including LTV, LTI, and DSTI limits (ECB, 2020). This clearly reflects the country's efforts to use prudential measures

to prevent the build-up of undesirable financial stability risks in a low-interest-rate environment.

Previously, Swiss franc-denominated loans characterized the Croatian market, just as they did the Hungarian market. Novokmet (2021) found that the spread of Swiss franc loans in Croatia was clearly driven by the interest rate differential (carry trade). The Croatian example also confirms that demand for credit can respond to low interest rates even in ways that pose structural risks.

The evaluation of the period following accession to the euro area is based on actual experience. In his speech marking the first anniversary of Croatia's accession, the Governor of the Croatian National Bank emphasized that the adoption of the euro had driven convergence of Croatian lending rates toward the euro area average and had buffered the domestic impact of global monetary tightening (Vujčić, 2024). Based on Zauder's (2024) analysis, it is apparent that the Croatian institutional and regulatory framework, in particular the National Reference Rate and the interest rate caps applied to variable-rate loans, is capable of dampening the direct transmission of the ECB's monetary policy decisions to households. Overall, Croatia's experience suggests that, alongside membership in the euro area, a set of institutional and regulatory tools has been developed that allows for the fine-tuning of monetary transmission, in part by "tailoring" the decisions of the common monetary policy.

3 WHY DOES THE 130-YEAR HISTORY OF HUNGARIAN RRE LOANS JUSTIFY THE ADOPTION OF THE EURO?

The budgetary burdens of the current RRE lending system

3.1 Legacy Housing Finance and Housing Assistance Schemes in Hungary

Historical experience with RRE lending in Hungary suggests that housing affordability in Hungary is not merely a cyclical, rather a fundamentally structural issue. When market conditions could not provide funding with the appropriate maturity and interest rate, maintaining RRE lending has always required some form of institutional solution. These solutions took various forms, with a common feature that they decoupled interest rates, either directly or indirectly, from domestic market conditions. In what follows, we show that three fundamental approaches can be identified over the past century and a half.

In Hungary, with the publication of the Otthon Start Program (Government Decree No. 227/2025 [VII.31]) in 2025, three points of debate attracted greater attention. First: under what circumstances is it appropriate to intervene in market

processes, and when can the need for interest rate subsidy be justified? Second: up to what level of customer interest rates is it appropriate to subsidise home ownership? Third: what level of budgetary burden is justified to assist young people in access to housing?

The fourth important question, although not raised in general, is why, historically, housing finance has required ongoing government support. In the following, we will address this issue in detail.

The central argument of our paper is that the adoption of the euro is needed precisely because, over the past 130 years, there has not been a sufficient supply of long-term (at least 10-year) funds denominated in Hungarian currency. In his book “Bank Operations”, published directly before the communist era (Szász, 1947), Antal Szász clearly articulates the fundamental problem of Hungarian RRE lending: “In a capital-poor country, especially here, it is precisely the concept of pupillarity² (from Lat. pupillaris, relating to wards/minors) that ensures a market for mortgage-backed securities.” The situation is different in Western states. For the populations of capital-rich countries, acquiring annuities and fixed-income securities is generally a top priority. Here a real market for mortgage-backed securities also exists.” (Szász, 1947, pp. 46).

Throughout history, the Hungarian RRE lending system has sought to address the issue of long-term funding in three ways:

3.1.1 Budget-funded housing subsidy systems

- The most well-known subsidies are those in the 2010–2026 period: Otthon Start Program, CSOK, the following key pillars:
- Government Decree No. 341/2011 (XII.29.) – on interest subsidies for home purchases;
- Government Decree No. 16/2016 (II.10.) — on housing subsidies related to the construction and purchase of new homes;
- Government Decree No. 302/2023 (VII.11.) — on home-building subsidies available in small settlements;

2 Pupilláris: an investment originally intended for the management of minors’ assets and for investments compliant with the public guardian’s regulations, which in practice was used as a synonym for “safe investment” in the 19th and 20th centuries. According to Neubauer (1918), “pupilláris-pupillary” refers to real-collateral-backed lending, while the definition in “Magyar Pénzügy” (1894) on p. 7, “a value providing pupilláris security is one that is independent of business cycles, yields the same interest even under adverse conditions, and is thus withdrawn from the sphere of speculation; whereby it protects widows and orphans [...] from suffering impairment of their capital.”

- Government Decree No. 518/2023 (XI.30.) – on the CSOK Plusz preferential loan scheme to support families in purchasing a home;

Government Decree No. 227/2025 (VII.31.) – on the FIX 3% housing loan provided under the Otthon Start program.

The first scheme, introduced by the first Fidesz government, which at the time carried a 6% loan burden (interest and administrative fees) on existing dwellings, was the first widely used subsidised housing loan after 1990 (Government Decree No. 12/2001 of I.31. on state subsidies for housing). This decree placed mortgage banks in a unique position, as the subsidy scheme tied the interest subsidy to the mortgage-backed securities issued (Papp, 2005). This scheme therefore had significant institutional implications: groups of credit institutions that did not own a mortgage bank refinanced their own mortgage loans with other mortgage banks, thereby securing interest subsidies for those loans from the budget. (Nagy et al., 2020). By 2003, however, the program had become a significant burden on the budget, so it was subject to significant cutbacks under Government Decree No. 221/2003 (XII. 12.). According to the report by the State Audit Office (ÁSZ, 2009), interest subsidies reached their highest ratio relative to GDP in 2005, at 0.8%.

RRE lending practices from the period before the change in the regime can also be classified as subsidised programs. By the early 1990s, funding loans with interest rates typically ranging from 3 to 3.5 percent had become unfeasible, as clearly demonstrated by Constitutional Court Resolution No. 32/1991 (VI.6.): *“The social changes currently taking place and the transition to a new regime obviously pose an extraordinary risk. With the change of regime, housing-related expenditures, accounting for 16.3% of total budget expenditures, have become unsustainable and unbearable for the state budget. ... when assuming the costs arising from the interest rate subsidy on long-term loans with preferential interest rates, the contracting parties, including the state, could only assume (since these were the circumstances at the time the contract was concluded) that the interest rate differential to be reimbursed to the authorized financial institutions would be the difference between the then-current interest rates of 1–3.5% and 5–6%. However, due to significant changes in circumstances (the lifting of interest rate caps, the transition to a market economy, and competition), this interest rate spread has widened to between 1 and 3.5 percent and 28 and 32 percent.”*

3.1.2 Foreign funds in Hungarian currency: lessons from the gold standard

There was one occasion in Hungarian history when foreign investors financed Hungarian RRE loans predominantly in Hungarian currency. This period shows that, with a unified and credible monetary system in place, interest rates were

able to replace direct government housing subsidies. Before World War I, mortgage bonds denominated in korona were purchased by foreign investors. The gold standard system was clearly the driving force behind foreign investors' purchases, since following the 1892 monetary reform, the value of the korona was linked to gold (Act XVII of 1892 on the Determination of the Value of the Korona: Section 3: "...one kilogram³ of fine gold is worth 3,280 koronas."). Gold standard parities clearly did more than just establish exchange rates between currencies; they also offered investors a unified currency system and investment market. By 1914, the mortgage loan portfolio had reached 4 billion koronas, a volume that the domestic mortgage market had long been unable to meet. The Hungarian Mortgage Bank, established in 1869, is a typical example of an institution that placed its mortgage bonds primarily abroad: in addition to the Budapest Stock Exchange, the securities were traded on the stock exchanges in Vienna, Amsterdam, Berlin, Frankfurt, Hamburg, and Paris (Botos, 2002, pp. 46). Furthermore, 45.5% of the mortgage-backed securities were issued at interest rates ranging from 4% to 5% (Botos, 2002, pp. 50), which has remained one of the most favourable interest rates on the market ever since.

3.1.3 Historical aspects of FX lending

When state-subsidised RRE loans were no longer available, and foreign funding sources denominated in Hungarian currency were no longer flowing in from abroad, the Hungarian banking system attempted to address the issue of RRE lending in Hungary through so-called FX lending. Numerous analyses dealt with FX lending between 2004 and 2009. Kovács (2013) presented the differences between actual banking operations and public perceptions; Bozsik (2009) and Király-Nagy (2008) discussed shortcomings in risk management; Bethlendi (2015) analysed errors in product development; and Bodzási (2015) summarized the changes in the regulatory environment resulting from lessons of FX lending. This paper does not address this topic.

It is important to note, however, that even between the two world wars, FX lending remained the only alternative. During and after World War I, foreign investors suffered significant losses on korona mortgage bonds due to the soaring inflation caused by the war. Although the pengő was also backed by gold, this was no longer enough to convince foreign investors (Act XXXV of 1925 on the Determination of the value of the Pengő and related provisions: Section 3: "Consequently, one kilogram of fine gold is worth 3,800 pengő.") By the time the pengő was introduced, foreign investors were no longer purchasing pengő-denominated

3 According to the spelling rules of the time, "kilogram"

bonds; domestic financial institutions typically issued these securities in British pounds and U.S. dollars, bearing interest rates of between 7 and 8% (Galántai Nagy, 1936). Act XV of 1925, in turn, allowed cooperatives of credit institutions also to issue mortgage bonds, similar to the pooling model presented today by Nagy et al. (2020), which promoted risk mitigation for investors and a relative decrease in transaction costs for issuers (Kovács, 2004).

Of the 596 thousand billion pengő in mortgage bonds, government bonds, and other bonds, only an amount equivalent to 178 billion pengő was in circulation in Hungary, while in the U.S. the figure was 221, in Sweden 68, and 61 billion pengő worth of bonds were held in the United Kingdom (Antal Szász, 1947, p. 47). The fact that 94% of the portfolio consisted of mortgage-backed securities indicates their marketability. It is noteworthy that the foreign investors of mortgage bonds issued before and after World War I differed from one another; that is, investors from countries that had suffered losses on korona-denominated mortgage bonds typically did not purchase Hungarian mortgage bonds during the interwar period; although this trend is, of course, qualified by the fact that investors from the former Central Powers had limited resources. The Great Depression quickly put an end to the emerging mortgage lending industry: with the 1931 transfer moratorium, Hungary suspended foreign-currency payments on its foreign debts, thus switching to a controlled foreign-exchange regime. Consequently, it was no longer possible to issue foreign mortgage bonds.

The above examples point in one direction: the domestic long-term bond market did not allow Hungarian RRE loans to be financed at favourable rates and in sufficient volumes.

3.2 The budgetary impact of subsidised RRE lending

When assessing the budgetary impact, it is important to note that the interest rate on the OSP and CSOK Plusz programs is currently 3%, which is significantly lower than the yields on long-term government securities, which are around 6% (as of 30 April 2026, the market yield on 5-year government securities was 5.93%, and the 10-year yield was 6.03%. Source: ÁKK). According to preliminary estimates by the Hungarian Central Statistical Office (KSH), GDP at current prices amounted to 86,893 billion forints for the full year 2025. Below we summarized the key elements of the housing subsidy system, based on the relevant budget acts:

Table 1

Summary of the amounts allocated in the budget for housing assistance, broken down by year

	Capital Expenditures	Operational expenditure	Total (HUF bn)
2024	147.2	34.5	181.7
2025	192.2	65.2	257.4
2026	423.4	14.5	437.9

Source: Act LV of 2023 Act XC of 2024; Act LXIX of 2025

For comparison, the amount of the Babaváró subsidy alone totals 276.7 billion forints, according to the 2026 budget. In other words, compared to previous legacy examples (the 1990 or the 2002 examples), although the amount allocated to subsidies has grown significantly, its current level still appears to be sustainable from a budgetary perspective.

While market-based 4.5% Czech koruna mortgage loans fulfil their purpose in the Czech Republic, the question is whether a 3% rate is justified in the long term for a subsidised program in Hungary that is more widely available (accounting for 80% of disbursements in certain months). Based on the past 130 years, the equilibrium interest rate has typically fluctuated between 4% and 7%, with 6% being the most common value. However, as we saw, even an interest rate of around 6% did not, in most cases, develop in a sustainable manner.

According to Czirfusz's (2024) budget analysis, approximately 90 percent of the most significant housing-related expenditures are not socially targeted, while interest subsidies represent a long-term, ongoing budgetary obligation. Housing policy expenditures are highly procyclical: the budgetary burden calculated in 2022, which is nearly 800 billion forint at 2024 prices, decreased by 2024 to a level roughly equivalent to that of the 1998–2002 period. At the same time, Czirfusz emphasizes that, despite their size, the budgetary burdens of the current subsidy schemes do not reach a level comparable to the fiscal risks of the previous mortgage-backed interest subsidy system.

The adoption of the euro creates a historic opportunity for the Hungarian mortgage market with limited access to long-term funding to once again become part of a low-interest, capital-rich, and liquid securities market, as it was in 1914.

3.3 Further aspects of RRE loan subsidies

Generous subsidies have a significant impact on housing affordability. The MNB's Housing Market Reports (e.g., MNB, 2025) typically use the evolution of the Housing Affordability Index (HAI) to show that households receiving subsidies are able to enter the housing market under significantly more favourable conditions than they would under purely market-based conditions.

However, the literature has pointed out (Bereczki et al., 2025; Banai et al., 2021) that housing affordability has improved primarily for buyers of existing homes who are eligible for family support, while accessibility has deteriorated among those who are not eligible, primarily due to supply-side issues. Improving supply is therefore of key importance; however, the ability of supply to adapt has been hampered by frequent changes in the regulatory environment (e.g., VAT regulations) as well as labour shortages in the construction industry.

Dancsik et al. (2022) point out that subsidised loans (CSOK) are on the whole more expensive than market-rate loans: the total transaction interest rate (which includes the government subsidy) is typically higher than that of market-rate mortgage loans. The reason for this is to be found in the cyclical nature of domestic subsidy policy: in the absence of long-term predictability, all affected economic actors must cover their costs in the short term. This is because the subsidised schemes also entail significant administrative and institutional costs, and the costs associated with eligibility requirements and specialized products are factored into the pricing of those products. Becsei et al. (2019, 2023) discuss the mechanism by which banks' administrative and institutional costs are reflected in lending rates from an institutional point of view, addressing the frictions associated with these costs as well as the operational and infrastructural conditions and recommendations necessary to reduce them.

The Otthon Start Program, announced in the summer of 2025, is a program with a significantly broader scope than the CSOK; it is a state-subsidised, forint-based RRE loan program designed to support the purchase of a first home. The program offers eligible applicants an RRE loan with a maximum term of 25 years, a fixed interest rate of up to 3%, and a maximum amount of 50 million forint. To improve affordability, the legislator reduced the minimum deposit to 10% for a specific group of beneficiaries.

In response to previous critical comments regarding the price-driving effect, the government has capped both the absolute and unit prices of real estate that can be purchased through this program (unit price: maximum 1.5 million forint/m²; residential properties: maximum 100 million forints; single-family residential buildings: maximum 150 million forints; Government Decree No. 227/2025, VII.31).

Table 2**Interest rates on retail loan programs with increased state subsidy**

Program	Launch date	Announced interest rate	Type of Interest
CSOK Loan	2015	3.0%	fixed for the term
Rural CSOK Loan	2019	3.0%	fixed for the term
Rural Home Renovation RRE Loan	2021	max. 3.0%	fixed for the term
Green Home Program	2021	max. 2.5%	fixed for the term
Green CSOK loan	2021	As low as 0%	fixed for the term
CSOK Plus Loan	2024	max. 3%	fixed for the term
Otthon Start Program	2025	max. 3%	fixed for the term

Source: own compilation

All in all, domestic programs appear to share two key characteristics: interest rates significantly below market levels that have become a de facto benchmark and now heavily influence customer decisions, and the need for ongoing government subsidies, representing a substantial long-term fiscal commitment to sustaining these rates.

4. EMPIRICAL STUDY: DID ANALYSIS OF THE EFFECTS OF ARTIFICIAL INTEREST RATE CONVERGENCE

We conducted an empirical analysis to show that the interest rates on RRE loans disbursed under the Hungarian Otthon Start Program are comparable to those in the countries selected as regional control group. Our methodology was the DiD (Difference in Differences) approach.

Our hypothesis was that, following the introduction of the Hungarian Otthon Start Program (OSP), the level of (subsidised) residential mortgage loan interest rates in Hungary would, as a result of the subsidy, become comparable in magnitude to market residential mortgage loan interest rates in euro area countries. In this sense, “artificial interest rate convergence” does not mean a long-term process, but rather a state of affairs resulting from policy intervention; it is “artificial” because it substitutes the natural process of convergence with a policy instrument.

4.1 Description of the DiD Methodology

The DiD method is a widely used econometric approach that was first applied by John Snow in his analysis of the 1855 cholera epidemic in London (Snow, 1855). Its uptake in modern economics is due to Card and Krueger's (1994) study on the minimum wage.

The logic of the methodology builds fundamentally on parallel trends (the common trends assumption), that is, the assertion that, in the absence of treatment, the value of the treated variable would continue to evolve in parallel with the trend in the control group (Angrist–Pischke, 2008).

This method is well-suited for estimating the causal effects of policy and regulatory interventions by comparing changes over time between the treatment and control groups.

The estimated regression equation is as follows:

$$Y_{it} = \beta_0 + \beta_1 \cdot \text{Treat}_i + \beta_2 \cdot \text{After}_t + \beta_3 \cdot (\text{Treat}_i \cdot \text{After}_t) + \epsilon_{it} \quad (1)$$

The model works as follows:

- The Treat (Hungary dummy) illustrates the fundamental difference between Hungarian and regional interest rates prior to the subsidy;
- The “After” (time dummy) variable shows how interest rates have generally changed in the region;
- The value of DID is 1 only where data relevant to Hungary is displayed and the subsidy is already in effect. This shows at the end the extent to which the Hungarian interest rate deviates from the trend shown by the control group's interest rates.

Our hypothesis can therefore be considered true if the sum of Treat (the difference between Hungarian interest rates and the regional average) and DID (the effect of regulatory intervention) is approximately zero. Thus, the combined effect of DID and Treat can be considered a “potential outcome,” which compares the effect of the subsidy to the baseline without the subsidy. By using this methodology, we directly identify the impact triggered by the Otthon Start Program on domestic housing finance costs, comparing it with market trends in the regional euro area control group.

4.2 The database used

He basis of our research is a monthly panel database covering the period from August 2023 to November 2025. The units tested are Hungary (treatment group), and Slovakia, Slovenia, and Croatia (control group). The reason for selecting the control group is that, as neighbouring countries with similar historical backgrounds, the selected countries face similar economic and social structures and challenges to those of Hungary, however, they have already adopted the euro for varying lengths of time. In other countries in the region (the Czech Republic, Poland, Romania) the euro is not yet or was not in use during the period under review (Bulgaria); therefore, we did not include these countries in our analysis.

Presentation of the Data Structure Used

The dependent variable in the analysis is the annual interest rate on newly disbursed RRE loans (in Hungary, market-rate loans; for the control group, the ECB interest rates listed under “sources”).

Table 3
The Structure of the Data Used for the DiD Analysis

Country_ID	Date	Rate (%)	Treat	After	DID (Treat*After)	Yield_10Y	HICP_infl
1 (HU)	2023-08	market	1	0	0	ECB data	ECB data
1 (HU)	2025-09	subsidised	1	1	1	ECB data	ECB data
2 (SK)	2023-08	market	0	0	0	ECB data	ECB data
2 (SK)	2025-09	market	0	1	0	ECB data	ECB data
3 (SI)	2023-08	market	0	0	0	ECB data	ECB data
3 (SI)	2025-09	market	0	1	0	ECB data	ECB data
4 (HR)	2023-08	market	0	0	0	ECB data	ECB data
4 (HR)	2025-09	market	0	1	0	ECB data	ECB data

Source: own compilation

“Treat” is a dummy variable that shows the data points corresponding to Hungary. “After” is also a dummy variable that shows how interest rates evolved in each country following the “treatment” (i.e., the introduction of the Otthon Start Program (OSP)). The “DID” policy effect is also a dummy variable, which is the product of “Treat” and “After” (meaning its value is 1 only for Hungary and only after the OSP, and otherwise 0). In addition, we used the 10-year yield and the HICP inflation rate as control variables.

We obtained domestic interest rates from the MNB’s interest rate statistics (MNB, 2026) and interest rates for the control group countries originate in the ECB’s

database (ECB, 2026a). We also used ECB data for the 10-year yield and the HICP inflation rate. (ECB 2026b, ECB 2026c).

For Hungary, we took into account the 3% interest rate specified by the program during the period treated, which, subject to the predominance of subsidised loan programs, approximates the marginal cost of financing available to borrowers. The analysis thus examines how the interest rate implied by the program relates to the regional market interest rate environment.

The treated database generated in this way therefore contains the OSP interest rate for domestic values during the period treated, while the untreated database contains the market interest rate for the same period (based on MNB data).

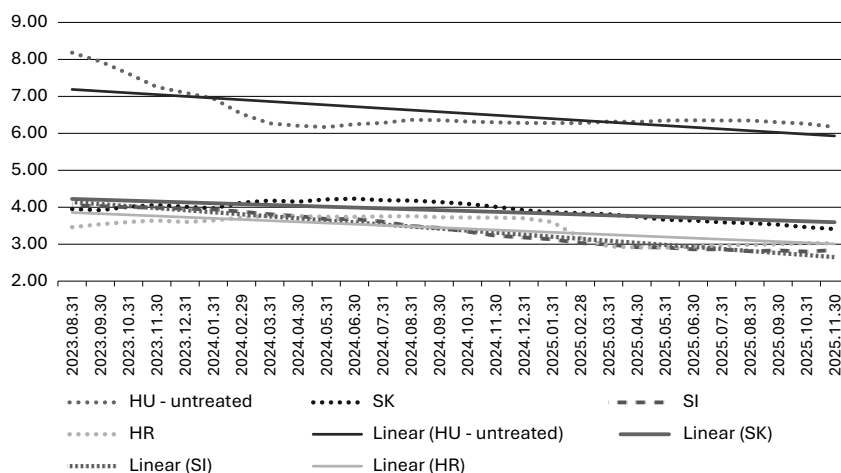
Examination of the parallel trends condition

As summarized in the methodological review, the DID methodology is based on the parallelism of trends. We verified this in two ways: first, visually, and second, using a Placebo test.

For the visual verification, *Figure 1* shows the interest rate levels typical for each country since the start of the test, as well as their characteristic (linear) trends.

Figure 1

RRE loan interest rates between August 2023 and November 2025 in Hungary and the control group countries (SK, SI, HR), as well as interest rate trends



Source: MNB and ECB interest rate data obtained from the DiD analysis database; own trend calculations. Domestic interest rates reflect the market interest rate level reflected in the MNB's statistics.

Figure 1 shows that the condition for parallel trends is approximately met, as a downward trend can be identified in all four countries included in the analysis. In addition, it appears that while the Slovenian and Hungarian trend lines are practically completely parallel, the Slovak and Croatian trend lines have slightly different (but very similar to each other) slopes.

For this reason, we also verified the assumption of parallel trends using a placebo test, using data from the period August 2023 – August 2025 (i.e., prior to the introduction of the OSP in September 2025), using a fictitious treatment dated December 2024 (i.e., beginning in January 2025). In the Placebo regression, we used a model extended by control variables. The Placebo DID coefficient shown in Table 4 is not significant at any standard significance level ($p=0.8485$). The Placebo test thus confirms the parallelism of the trends, thereby increasing confidence in meeting the parallel trends condition, and thus enabling a causal interpretation of the model.

Table 4
Results of the OLS regression for the Placebo test

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	2.58804	0.953918	2.713	0.0730	*
Treat	1.91954	1.23610	1.553	0.2183	
After	−0.491125	0.149277	−3.290	0.0461	**
DID	0.0631773	0.303555	0.2081	0.8485	
Yield_10Y	0.272704	0.388737	0.7015	0.5335	
HICP_Infl	0.0728523	0.0832996	0.8746	0.4462	

Source: own calculations

4.3 Modelling and Estimation

The basic descriptive statistics for the untreated database used are summarized in Table 5. Based on the descriptive statistics, it is clearly visible that Hungary is characterized by significantly higher levels and greater volatility for all variables examined than the other countries in the region, while Slovakia, Slovenia, and Croatia form a relatively homogeneous group. This is particularly pronounced in the case of inflation, where Hungarian data show not only a higher average but also a wider range of values. With regard to interest rates and long-term yields, the differences among countries in the region are moderate, while Hungary's divergence indicates structural characteristics even at the level of raw data.

Table 5
Key descriptive characteristics of the analysed (untreated) database

	<i>Rate</i>				<i>Yield_10Y</i>				<i>HICP_Infl</i>			
	HU	SK	SI	HR	HU	SK	SI	HR	HU	SK	SI	HR
Average	6.56	3.91	3.39	3.43	6.77	3.51	3.17	3.29	5.14	4.44	2.84	4.67
Median	6.32	3.96	3.39	3.60	6.81	3.47	3.14	3.29	4.20	4.00	2.50	4.50
Standard deviation	0.55	0.25	0.46	0.35	0.37	0.21	0.19	0.34	2.67	1.87	1.64	1.20
Minimum	6.17	3.41	2.80	2.91	5.98	3.22	2.89	2.88	3.00	2.40	0.00	3.00
Maximum	8.18	4.23	4.05	3.77	7.53	4.12	3.67	4.18	14.20	9.60	7.10	8.40

Source: Data from the MNB and the ECB used for modelling, own calculations

We performed the modelling using the Gretl software with pooled OLS estimation. Implicitly, we used the treated database for the analysis. In view of the fact that interest rate data are inherently display autocorrelation, we opted to use clustered standard errors, along the findings of Bertrand, Duflo, and Mullainathan (2004), to ensure that the p-values remain unbiased. This solution is also suitable for the “preliminary” treatment of heteroscedasticity, however, due to the low number of clusters, we draw conclusions with due care.

We used data from the period between August 2023 and November 2025 (the most recent period available at the time we closed the analysis). Despite the longer time series, we excluded the years prior to 2023; while this limits the generality of the results, it is important for the stability of the estimate. As of 2023, the DiD estimator is already capable of accurately measuring the effect of subsidy policy.

During this research, we ran two models:

- (1) A reduced model containing the basic variables from the DiD analysis,
- (2) An extended model that also includes control variables (10-year government bond yield, HICP inflation).

During model selection, we had to take into account that in a DiD analysis, our goal is not necessarily to maximize R^2 (improve the fit), but instead, in our case, to verify the robustness of the DID coefficient and to determine the value of the Treat coefficient.

4.3.1 Reduced model

We present the calculations for the basic DiD model (restricted OLS model) in Table 6. The model fits the data well overall ($R^2 = 90\%$, adjusted $R^2 = 89\%$), and its coefficients are significant at all standard significance levels.

Table 6
Reduced OLS model

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	3.63520	0.156252	23.26	0.0002	***
Treat	2.96064	0.156252	18.95	0.0003	***
After	-0.532978	0.0518217	-10.28	0.0020	***
DID	-3.06286	0.0518217	-59.10	<0.0001	***
R-squared		0.897620	Adjusted R-squared	0.894776	

Source: own calculations

The Treat, namely the difference between domestic and regional interest rates prior to the subsidy, corresponds to 2.96 percentage points, while the effect of the subsidy takes a value of -3.06 percentage points in the restricted OLS model.

4.3.2 Extended Model

Table 7
Extended OLS Model

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	1.94626	1.11980	1.738	0.1806	
Treat	1.44664	1.44856	0.9987	0.3916	
After	-0.432524	0.115822	-3.734	0.0335	**
DID	-3.13986	0.272363	-11.53	0.0014	***
Yield_10Y	0.417305	0.448808	0.9298	0.4211	
HICP_Infl	0.0731073	0.0918273	0.7961	0.4841	
R-squared		0.930718	Adjusted R-squared	0.927450	

Source: own calculations

The extended model is presented in *Table 7*. The model fit is excellent; the R^2 value increased by 3 percentage points. The DID coefficient is significant even at the 99% confidence level. Although none of the control variables is significant, the performed Wald test indicates that the control variables collectively provide information.

Test statistic: Robust $F(2, 3) = 31.6648$, p -value 0.0096188

It is noteworthy that while the DID value is -3.06 in the reduced specification, it is -3.14 in the extended model – that is, there is only a slight difference between the two models. This indicates that the estimate of the policy impact is sufficiently robust.

At the same time, based on the Wald test, the more comprehensive model is to be used.

4.3.3 Methodological diagnostics

Testing for multicollinearity (VIF)

We performed the multicollinearity test as follows, also using the Gretl software:

- we built the extended model using simple OLS estimation, without using clustered standard errors (by resetting the data interpretation in Gretl from panel to cross-sectional)
- We calculated the VIFs (Variance Inflation Factors) for the model obtained, which are presented in *Table 8*. A VIF value greater than 10 may indicate a multicollinearity issue.

Table 8
VIF values of the extended model's coefficients

Coefficient	VIF
Treat	35.468
After	1.378
DID	1.539
Yield_10Y	39.126
HICP_infl	1.680

Source: own calculations

The outcome of the multicollinearity analysis is of paramount importance. The exceptionally high values of *Treat* and *Yield_10Y* indicate that there is an extremely strong correlation between the treatment group and the 10-year yield; in effect, the model cannot clearly identify whether the differences in the level of the dependent variable are caused by belonging to a group (*Treat*) or by the yield environment.

Due to the high collinearity, the interpretability of the coefficients when considered individually is limited; at the same time, the Wald test confirms the combined information content of the control variables, so we have retained them in

the specification. Accordingly, in our analysis, we place emphasis on the combined effects (in particular, the joint interpretation of Treat and DID).

It is important, however, that the DID value is stable and is not affected by multicollinearity. For this reason, the hypothesis (Treat + DID ~ 0) remains testable, and this does not compromise the reliability of the combined hypothesis test.

Normality of residuals (Chi-square test)

The normality of the residuals is an important condition for model adequacy. To verify this, we performed a Chi-square test. The null hypothesis (H_0) of this statistical test is that the residuals follow a normal distribution.

Test for null hypothesis of normal distribution: Chi-square (2) = 1.926 with p-value 0.38170

A p-value of 0.38 indicates an adequate result; we cannot reject the null hypothesis, meaning that the coefficients obtained from the regression analysis and their corresponding p-values can be considered reliable.

4.3.4 Summary

To test the hypothesis, we performed a linear constraint analysis. Our H_0 hypothesis is that the specified condition (Treat + DID ~ 0).

For this purpose, we selected "Linear Constraints" in the "Tests" section of Gretl, and then used it to check the condition described in *Equation 2*:

$$b[\text{Treat}] + b[\text{DID}] = 0 \quad (2)$$

The following result is obtained:

Test statistic: Robust F(1, 3) = 1.00062, with p-value = 0.390874

Given that the p-value is very high, we do not reject the H_0 hypothesis, which indicates that we find no statistically significant deviation between the sum of the Treat and DID coefficients and the null value. Based on the results, the interest rate implied by the subsidy does not differ significantly from the euro area interest rates examined, which empirically supports the assumption that the magnitudes of two interest rates are comparable.

5 SUMMARY

In the present paper, we examined the Hungarian housing finance system within a historic context covering roughly 130 years. Our most important statement is that residential real estate lending in Hungary requires support not because of problems caused by economic cycles, but instead, due to a historic lack of capital, the country does not have access to long-term, low-cost domestic funding that could serve as the basis for providing long-term real estate loans. For this reason, RRE lending historically typically required a separate supporting institution.

During this period, with the exception of a brief cycle (the period when the gold standard was used), Hungary had to provide ongoing or some form of budgetary interest subsidy (the institutional framework for this underwent significant changes), or to finance borrowers' housing needs through FX lending as last resort. All these solutions caused RRE loan interest rates to deviate from actual market conditions.

For this reason, we examined the interest rates at which market-based lending operates in countries that are members of the euro area with no extensive RRE loan subsidy system, but whose economic indicators are comparable to those of Hungary due to their shared regional history. We concluded that, in the Hungarian Otthon Start Program, the budget sets an interest rate, funded from budgetary resources, that is roughly comparable to the market interest rates in neighbouring countries that use euro, by creating a kind of "artificial interest rate convergence".

This finding attracts multiple consequences. On the one hand, the potential adoption of the euro in Hungary could support, in a stable and predictable manner, the resolution of a centuries-old problem in housing finance, namely the shortage of capital. In parallel, it may reduce the budgetary funds needed for housing subsidies in Hungary, and, to a significant extent, substitute a substantial portion of them structurally.

The results of this paper suggest that, in addition to subsidy levels, institutional alternatives may also play a decisive role in focusing housing policy interventions. Viewed in this light, euro area membership's lower interest rate environment does not simply supplement budgetary subsidies. Instead, it serves as an institutional alternative that structurally displaces a portion of those subsidies in the domain of housing finance in Hungary.

REFERENCES

- Angrist, J.D. – Jörn-Steffen, P.: Mostly Harmless Econometrics: An Empiricist's Companion. *Princeton University Press*, 2008.
- ÁSZ (2009): Jelentés a lakástámogatási rendszer hatékonyságának ellenőrzéséről. Sorszám: 0908.
- Banai, Á. – Fábián, G. – Hajnal, G. – Nagy, T. – Winkler, S. (2021): Növekvő lakásárak Magyarországon – okok és következmények. In: Salamin Géza – Tóth Bálint (szerk.): Az urbanisztika aktuális kérdései. *Magyar Urbanisztikai Társaság*, Budapest.
- Becsei, A. – Csányi, P. – Bógyi, A. – Máriás, E. – Gacsai, M. – Kovács, L. (2023): Digitális állampolgárság – digitális banki ügyintézés: a Magyar Bankszövetség digitalizációs javaslatai: A banki alapszolgáltatásoktól a lakáshitelig, avagy lakáshiteligénylés 15 nap helyett 15 perc alatt. *Gazdaság és Pénzügy*, 10(4), 391-426. <https://doi.org/10.33926/GP.2023.4.4>.
- Becsei, A. – Bógyi, A. – Csányi, P. – Kovács, L. (2019): A jövő bankja, a bankok jövője: A Magyar Bankszövetség digitalizációs javaslatai. *Gazdaság és Pénzügy*, 6(3), 299-310. <http://www.bankszovetseg.hu/Public/gep/2019/299-310%20BecsBodCsaKo.pdf>.
- Bereczki, Á. – Lados, Cs. – Szabó, B. – Winkler, S. (2025): A 2014-et követő évtized lakáspiaci árváltozásának mozgatórugói. *KAPOCS*, 2025(1-2), 60. <https://doi.org/10.63582/KAPOCS.2025.1-2.5>.
- Berta, D. – Csorba, N. – Csutiné Baranyai, J. – Dancsik, B. – Kiss, G. P. – Komlóssy, L. – Krakovsky, S. – Palicz, A. M. – Pásztor, Sz. – Soós, G. D. (2020): Maastricht 2.0. In: Virág Barnabás (szerk.): Long-term sustainability and the euro – How to rethink the Maastricht criteria? *Magyar Nemzeti Bank*, Budapest, 237-284.
- Bertrand, M. – Dufló, E. – Mullainathan, S. (2004): How Much Should We Trust Differences-in-Differences Estimates? *The Quarterly Journal of Economics*, 119 (1) 02.2004, 249-275. <https://doi.org/10.1162/003355304772839588>.
- Bethlendi, A. (2015): Egy rossz termékfejlesztésből rendszerszintű piaci kudarc –A hazai lakossági deviza-jelzáloghitelezés. *Hitelintézeti Szemle*, 14(1): 5-29. <https://hitelintezetiszemle.mnb.hu/1-bethlendi-3>.
- Bod, P.Á. (2012): "Az euró átvétele nem pénzügyi, hanem nemzetstratégiai döntés." *Közgazdasági szemle* 59(6), 695-698.
- Bod, P.Á. – Pócsik, O. – Neszmélyi, Gy.I. (2020): Az euró és a szlovák gazdaság. *Közgazdasági Szemle* 67(4) 321-351.
- Bodzási, B. (2015): A devizahitelezés korszaka Magyarországon. *Fontes Iuris*, 1(1): 7-17. http://real.mtak.hu/25520/1/A_devizahitelezes_korszaka_Magyarorszag_u.pdf.
- Botos, J. (2002): A magyarországi jelzáloghitelezés másfél évszázada. *Szaktudás Kiadó Ház*, Budapest.
- Bozsik, S. (2009): A magyar bankrendszer válságtűrő képessége. Észak-magyarországi Stratégiai Füzetek, 6(2) 46-67. https://epa.oszk.hu/05300/05359/00011/pdf/EPA05359_strat_2009_02_046-067.pdf.
- Bukowski, S. I. – Bukowska, J. E. – Zięba, Ł. J. (2023): Slovakia in the Euro Area – Costs and Benefits. *European Research Studies Journal*, XXVI. (1) 159-178. <https://ersj.eu/journal/3103>.
- Card, D. – Krueger, A. (1994): Minimum Wages and Employment: A Case Study of the Fast Food Industry in New Jersey and Pennsylvania. *American Economic Review*, 84. 772-784.
- Czelleng, Á. (2018): Az euró bevezetése Magyarországon: Az euró bejövetele a magyarokhoz. A 25 éves GKI születésnap konferenciája. *Közgazdasági Szemle*, 65(1), 102-106. <https://doi.org/10.18414/KSZ.2018.1.102>.

- Czirfusz, M. (2024): Lakáspolitikák és költségvetési kiadások. In Lukács, Gy. (Szerk.), *Éves jelentés a lakhatási szegénységről 2024* (pp. 27–39). Budapest: *Habitat for Humanity Magyarország*. <https://habitat.hu/sites/lakhatasi-jelentes-2024/>.
- Dancsik, B. – Marosi, A. – Szabó, B. (2022): Túl drága az olcsó hitel – a családi otthonteremtési kedvezmény támogatott hitelkamatainak vizsgálata. *Közgazdasági Szemle* 69(12), 1493–1506.
- Darvas, Zs. – Szapáry, Gy. (2008): Az euróövezet bővítése és euróbevezetési stratégiák. *Közgazdasági Szemle*, LV. (10) 833–873.
- Deskar-Škrbić, M. – Kunovac, D. (2020): Twentieth Anniversary of the Euro: Why are Some Countries Still Not Willing to Join? Economists' View. *Comp Econ Stud* 62, 242–262. <https://doi.org/10.1057/s41294-020-00115-2>.
- Clichici, D. (2021): “The Path to Euro Adoption: a Case Study of Slovenia and Slovakia,” Global Economic Observer, “Nicolae Titulescu” University of Bucharest, Faculty of Economic Sciences; *Institute for World Economy of the Romanian Academy*, 9(1), 107–115, June.
- Európai Központi Bank (2020): Croatia – assessment of ERM II prior commitment No. 2 on the macroprudential toolkit. Frankfurt am Main: *European Central Bank*, 03.07.2020 https://www.ecb.europa.eu/pub/pdf/other/ecb_assessment_croatia_erm_II~f51d3boa22.en.pdf (Downloaded: 10.04.2026).
- Európai Központi Bank, EKB (2026a): Bank interest rates – Loans for house purchase (Households). *ECB Data Portal*. <https://data.ecb.europa.eu/key-figures/money-credit-and-banking/bank-interest-rates/loans> (Downloaded: 02.02.2026).
- Európai Központi Bank, EKB (2026b): Long-term interest rates for EU Member States. *ECB Data Portal / Statistical Data Warehouse*. https://www.ecb.europa.eu/stats/financial_markets_and_interest_rates/long_term_interest_rates/html/index.en.html (Downloaded on 02.02.2026).
- Európai Központi Bank, EKB (2026c): Harmonised Index of Consumer Prices (HICP) – data information. *ECB Data Portal*. <https://data.ecb.europa.eu/data/concepts/hicp/data-information> (Downloaded: 02.02.2026).
- Európai Parlament (2025): The euro over the years: its history and benefits. Available at <https://www.europarl.europa.eu/topics/en/article/20250709STO29570/the-euro-over-the-years-its-history-and-benefits> (Downloaded: 08.04.2026).
- Európai Bizottság (2009): Five years of an enlarged EU – Economic achievements and challenges. *European Commission, Directorate-General for Economic and Financial Affairs, Brussels*. https://ec.europa.eu/economy_finance/publications/pages/publication14078_en.pdf (Downloaded: 10.04.2026).
- Falágiarda, M. – Gartner, C. – Mužić, I. – Pufnik, A. (2023): Has the euro changeover really caused extra inflation in Croatia? The ECB Blog. *European Central Bank*, 2023.03.07. <https://www.ecb.europa.eu/press/blog/date/2023/html/ecb.blog.230307~1669dec988.en.html> (Downloaded: 10.04.2026).
- Festić, M. – Bohinc, R. (2024): ‘Slovenia: Slovenia’s Monetary Policy and Experience in the Euro Area’. In: Zoltán Nagy (ed.) *Economic Governance. The Impact of the European Union on the Regulation of Fiscal and Monetary Policy in Central European Countries*, 821–841. Miskolc–Budapest, *Central European Academic Publishing*.
- Goodman-Bacon, A. (2021): “Difference-in-Differences with Variation in Treatment Timing.” *Journal of Econometrics* 225 (2): 254–277. <https://doi.org/10.1016/j.jeconom.2021.03.014>.
- Győrffy, D. (2023): Az euró be (nem) vezetése Magyarországon – Az önálló monetáris politika mérlege. In *Gazdasági rendszerek és rendszerváltozások* 177–188.
- Horvatova, Eva. 2020: Twenty Years of Mortgage Banking in Slovakia. *International Journal of Financial Studies* 8 (3) 56. <https://doi.org/10.3390/ijfs8030056>.

- Incze, Zs. (2025): Alternatíva a jövőbeli hitelezésben: Jövedelmi pályákhoz igazodó törlesztőrészek. *Hitelintézeti Szemle*, 24(3), 98–124. <https://doi.org/10.25201/HSZ.24.3.98>.
- International Monetary Fund (2007): Republic of Slovenia: 2007 Article IV Consultation – Staff Report. *IMF Country Report* 07/183, Washington, DC. <https://www.imf.org/external/pubs/ft/sr/2007/cro7183.pdf> (Downloaded: 10.04.2026).
- Király, J. – Nagy, M. (2008): *Jelzálogpiacok válságban: kockázatalapú verseny és tanulságok*. *Hitelintézeti Szemle*, 7(5) 450–482.
https://www.bankszovetseg.hu/Content/Hitelintezeti/HSZ5_kiraly_nagy_450_482.pdf.
- Klaco, J. – Martino, F. (2024): Retail interest rates in Slovakia vs. other euro area countries: Where do banks rush and where do they take their time? *Národná banka Slovenska, Policy Brief* 11/2024, Bratislava.
<https://nbs.sk/dokument/3f2b1e72-f15c-4042-982f-78e6821b8f0d/stiahnut?force=false> [Downloaded: 09.04.2026].
- Kovács, L. (2013): A devizahitelek háttere. *Hitelintézeti Szemle*, 12(3): 183–193. <https://www.bankszovetseg.hu/Content/Hitelintezeti/183-193-Kovacs.pdf>.
- Kovács, L. – Pásztor, Sz. (2018): A globális jelzálogpiac helyzete és kihívásai. *Közgazdasági Szemle*, 65(12) 1225–1256. <https://doi.org/10.18414/KSZ.2018.12.1225>.
- Kovács, Gy. (2004): A jelzáloglevél-kibocsátáson alapuló hitelezés problémái történeti megközelítésben. In: Botos Katalin (szerk.): *Pénzügyek a globalizációban*. Szeged: JATEPress, 110–136.
- Kundid Novokmet, A. (2021): Troubles with the CHF loans in Croatia: The story of a case still waiting to be closed. *Journal of risk and financial management*, 14(2), 75. <https://doi.org/10.3390/jrfm14020075>.
- Kunovac, D. – Pavić, N. (2018): Can the Adoption of the Euro in Croatia Reduce the Cost of Borrowing? *Privredna kretanja i ekonomska politika*, 27(1) 142. 71–94.
- Feld, L.P. – Schmidt, C.M. – Schnabel, I. – Wieland, V. (2016): Maastricht 2.0: Safeguarding the future of the Eurozone. *How to fix Europe's monetary union* (2016) 46–61.
- Magyar Nemzeti Bank, MNB (2025): *Lakáspiaci jelentés – 2025. november*. Budapest: Magyar Nemzeti Bank. <https://www.mnb.hu/letoltes/laka-spiaci-jelente-s-2025-november-hun.pdf> (Downloaded: 22.04.2026).
- Magyar Nemzeti Bank (2001): A forint útja az euróhoz. Budapest: *Magyar Nemzeti Bank*. <https://www.mnb.hu/letoltes/forint-utja-az-eurohoz-hu.pdf> [Downloaded: 08.04.2026].
- Magyarország Kormánya (2024): Magyarország konvergencia programja 2024–2028. Available at <https://cdn.kormany.hu/uploads/sheets/d/do/doi/doi1083d8c20e7821fa71edad692e996.pdf> (Downloaded on 08.04.2026).
- Magyar Nemzeti Bank, MNB (2026): Háztartásoknak nyújtott hitelek kamatstatisztikái. <https://statisztika.mnb.hu/sk-haztartasi> (Downloaded: 02.02.2026).
- Magyarország Kormánya (2025) 227/2025. (VII. 31.) Korm. rendelet az Otthon Start program keretében biztosított FIX 3%-os lakáshitelről. <https://njt.hu/jogszabaly/2025-227-20-22> (Downloaded: 15.02.2026).
- Magyar Pénzügy (1894): Az értékek pupilláris jellege. *Magyar Pénzügy* 14(50), Budapest, 1894.12.13.
- Marinkás, Gy. (2024) “Hungary: No Euro Until ‘Maastricht 2.0 Criteria’ Are Met”, in Nagy, Z. (ed.) *Economic Governance: The Impact of the European Union on the Regulation of Fiscal and Monetary Policy in Central European Countries*. Miskolc–Budapest: *Studies of the Central European Professors’ Network*, 717–743. DOI:10.54237/profnet.2024.znecogov_31.
- Festić, M. – Bohinc, R. (2024): Slovenia: Slovenia’s Monetary Policy and Experience in the Euro Area. In: Zoltán Nagy (ed.) *Economic Governance. The Impact of the European Union on the Regula-*

- tion. of Fiscal and Monetary Policy in Central European Countries, pp. 821–841. Miskolc–Budapest, *Central European Academic Publishing* https://doi.org/10.54237/profnet.2024.znecogov_36.
- Mundell, R. (1961): A Theory of Optimum Currency Areas. *American Economic Review*, 657–665.
- Galánthai Nagy, S (1936): Nagy Magyar Compass 1936-1937 I. Pénzüntézetek, Budapest.
- Nagy, Gy.L. – Incze, Zs. – Landgraf, E. (2020): Jelzálogbanki refinanszírozás: Javaslatok az európai fedezettkötvény-direktíva magyarországi implementációjához. *Hitelintézet Szemle*, 19(3): 102–129. <https://doi.org/10.25201/HSZ.19.3.102129>.
- Neményi, J. – Oblath, G. (2012): Az euró bevezetésének újragondolása. *Közgazdasági Szemle*, LIX. (6), 569–684.
- Neubauer, F (1918): A jelzáloghitel megszervezése az átmeneti gazdaságban. *Közgazdasági Szemle*, XLII (59), 22–36.
- Palánkai, T. (2020): Az euró és magyarországi bevezetésének néhány kérdése. *Európai Tükör*, 23(2), 129–137. <https://doi.org/10.32559/et.2020.2.7>.
- Papp, M. (2005): A jelzáloglevél alapú finanszírozás helyzete Magyarországon pénzügyi stabilitási szempontból. MNB Műhelytanulmány 36. *Magyar Nemzeti Bank*. <https://www.mnb.hu/letoltes/mt36.pdf>.
- Park, K. A. (2020): Choice, Capital, and Competition: Private Mortgage Insurance Application and Availability. *Housing Policy Debate*, 30 (2), 137–163. <https://doi.org/10.1080/10511482.2019.1645036>.
- Požlep, M. (2023): Determinants of interest rate spread for new household loans in Slovenia – Some preliminary observations. *Banka Slovenije, Discussion Papers, Ljubljana*. ISBN: 978-961-6960-76-2.: https://www.bsi.si/storage/uploads/d3b15cao-8451-42de-9cc1-748060d0b4c2/pa_determinants_of_interest_rate_spread_for_new_household_loans_in_slovenia.pdf (Downloaded: 10.04.2026).
- Snow, J. (1855): On the mode of communication of cholera (2. ed.). *John Churchill, London*.
- Soric, P. (2024): The euro and inflation in Croatia: much ado about nothing? *Public Sector Economics, Institute of Public Finance*, 48(1), 1–37. DOI: <https://doi.org/10.3326/pse.48.1.1>.
- Szász, A. (1947): Banküzemtan. *TÉBE Kiadóvállalata M. Sz., Budapest*.
- Vujić, B. (2024): One year with the euro. Beszéd a „One year with the euro” című konferencián, Zágráb, 2024.01.30. *BIS – Central bankers’ speeches*. <https://www.bis.org/review/r240131c.pdf> (Downloaded: 10.04.2026).
- Weyerstrass, K. – Neck, R. (2008): Macroeconomic Consequences of the Adoption of the Euro: The Case of Slovenia. *Int Adv Econ Res* 14, 1–10. <https://doi.org/10.1007/s11294-007-9131-x>.
- Zauder, K. (2024): Interest rate exposure of households in Croatia: A simulation of the national reference rate. *Zagreb International Review of Economics & Business*, 27(2), 249–267. DOI: <https://doi.org/10.2478/zireb-2024-0026>.