

TRANSITION TO MARKET ECONOMY AND MODERN MONETARY POLICY

Werner Riecke's life and achievements in Hungarian economic policy

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1 ON COURAGE AND FRIENDSHIP

Werner Riecke was born in the German Democratic Republic (NDK), attended high school in Erfurt, and then studied at the University of Economics Marx Károly, Budapest on a student grant. He had been living in Hungary since 1972. He belonged here. He was a member of the College of Advanced Studies 'Rajk' (Rajk College) during his years at the university from 1974 to 1978. We were roommates at our dormitory and teammates at the university. Lifelong friendships are made that way. We both obtained our degrees in mathematical economics specialization. At the university we could enrol in important maths courses in addition to linear programming and optimisation – regarded to be maths subjects for the planned economy –, but we had to learn modern economic theory, macroeconomics and its financial and economic policy implications individually at the courses organised at the Rajk College. As an important part of individual work, we had to submit papers reviewing one or another sub-area to our Student Academic Competition. That kind of work prepared us for the publication of professional articles in prestigious journals as graduate students or as trainees at our workplaces. We continued to work together on joint publications after graduation on topics related to our work at Rajk either side by side with workplace assignments or independent of them (Ábel–Riecke, 1980).

Attila Chikán who launched the extraordinarily successful *International Society for Inventory Research* at that time was a great help. We produced studies on the behaviour of macro-inventories for the conferences of the Society (Chikán–Ábel–Riecke, 1980; Ábel–Riecke, 1981). Corporate inventory management was an internationally known research topic, but few people dealt with the evolution of macro (national economy) inventories. The topic gained particular importance in our country for two specific reasons. One was the peculiar behaviour of corporate inventories because of our shortage economy (hoarding of input stock and low inventory level of finished products), which resulted in higher macro-level in-

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ventories than was customary in market economies. The reason was that stocks did not accumulate with a dwindling number of producers manufacturing goods but with a high number of users of those products that were trying to accumulate input stocks so that they could produce uninterrupted despite shortages. The other reason the topic was in the centre of attention in this country was that the financial position of companies limited their efforts to hoard input stocks. It was an excellent occasion to apply our interest in macro-finance through the connections of macro-finance and inventory financing.

In the 1980s Werner was engaged in macroanalysis and related computer (*main-frame*) programming working for different companies. He worked for the Econometrics Laboratory headed by *György Szokolczai* (INFELOR-Számki²), the IT centre of the Planning Office and for the National Office for Materials and Prices. Many people thought it was not a suitable workplace for Werner. However, one of the deputy chairpersons of the Office was *Márta Nagy*, who followed Werner's macro-inventory modelling research with interest. She knew the area well and such research played an important part in the modernisation of the Office she had implemented. Werner's knowledge and enthusiasm was acknowledged in those jobs, and he could feel to be useful. He worked on critical issues, but his working hours were fixed, and he had to be present at this workplace every day. So, he did not enjoy the freedom a researcher could have. Since his wife worked in Székesfehérvár and the couple lived with her parents, Werner travelled to Budapest every day by train. It was a reasonable solution at the time since a beginner's salary would not be sufficient to rent a flat while workplaces reimbursed travel expenses.

He got a job at the Financial Research Institute of the Ministry of Finance in 1982, which brought about major changes in his life. At the time the Institute was headed by *István Hagelmayer*, who had established one of the best workshops in the country in terms of reform activities preparing the age of transition. Werner's main field of research there was inflation and exchange rate theory. He worked with *István Szalkai* and *János Száz* (Riecke–Szalkai–Száz, 1981; 1985). *György Surányi*, the future Governor of the Central Bank³ was a senior colleague too. *Mihály Kupa*, the future minister of finance was a deputy and later the head of the Institute. Werner Riecke worked next to Mihály Kupa between 1987 and 1989 participating in the efforts to set up a modern tax system including both personal income tax and VAT. Still, the fantastic opportunity for him came in 1990, when

2 INFELOR was a special place. Werner could work with excellent colleagues, who took central positions later, such as *Álmos Kovács*, *Judit Neményi*, *Ferenc Rabár* or *János Stahl*.

3 The Governors of the Bank were *Ferenc Barta* from 15 June 1998 to 30 June 1990; *György Surányi* from 1 July 1990 to 30 November 1991 and again from 1 March 1995 to 1 March 2001; and *Ákos Péter Bod* from 9 December 1991 to 14 December 1994.

György Surányi, Governor of the Central Bank offered him a position at the National Bank of Hungary.

Zoltán Farkas has given a good description of Werner's working style in his memoir. "He did not make extreme statements, but he used appropriate sometimes sarcastic remarks to characterise a situation. His knowledge was respected, his style was loved. He was one of the little known highly educated financiers who had done so much for the country in different eras and positions" (Farkas, 2021). Zoltán Farkas quoted Mihály Kupa's response to the news of Werner's death, "He was a fine guy and a still young warrior." The remark may refer to the fact that Werner had always stood firmly by established truth, which in those time often deviated from the "official" view. That was what he represented standing by it humbly but firmly even if this often put him at a disadvantage.

2 INDEPENDENT MONETARY POLICY AND THE INDEPENDENT CENTRAL BANK

Employed by MNB, Werner Riecke played an important part in transforming the framework of monetary policy from 1990 to 2004. He started as an advisor to Governor György Surányi, and he became head of the Department of Financial Policy. He closely monitored the everyday work of the department and took an active part in it even after 1995 when he became managing director and Deputy Governor in 1998. The 1990s had been the period of establishment of the modern Hungarian Central Bank. Studying the activities of the main actors of the age and the transformation of the banking system, *Juliet Johnson* has found the international cooperation of central bankers and the assistance by international financial organisations contributed to the success of the transformation of the banking systems in Central and Eastern Europe. She described the community of central bankers as missionaries (Johnson, 2016), made successful by their influence based on their persuasive ability (*Piroska*, 2017:448).

Uniform professional culture was prevalent with respect to the theoretical framework guiding the everyday operations of central banks (*Piper*, 1994; *Riecke–Antal*, 1993). Werner Riecke and György Surányi had become well-known actors of the international cooperation of central banks, which provided a solid background for the application of up-to-date knowledge in this country (Johnson, 2016:3).

Werner Riecke worked for the National Bank of Hungary for almost fifteen years in the period when it was transformed into a modern central bank. Before going into details about the main components of his contribution, let me give you an overview of the legal and institutional environment prevalent at the time.

Central bank activities were shaped by two main principles in the 1990s. One was price stability and the other the independence of the central bank. Thus, the main goal of the central bank was to maintain price stability. It was allowed to use any instrument it had found appropriate and could neglect the disturbing impact of any political objective or influence. Using a phrase by *Borio* (2011), central banks were guided by a kind of “narrowly interpreted role of a central bank” not only in the 1990s but also later beginning from 2007 when the global fiscal crisis broke out. Views related to the self-regulatory ability of market economies identified the framework of the tasks and approaches required to maintain price stability. Guaranteeing the independence of central banks was important there since a central bank could not have committed itself to maintain price stability unless all potential political influence was excluded. Independence practically meant two crucial elements. First, shaping monetary policy was regarded to be a professional issue, and then its institutional regulatory guarantees had to be created. The evolution of the law on the central bank from 1990 to 2000 is the story of how the above principle was implemented in practice in Hungary.

The independence of the central bank is a concept describing its relationship to the government relying on many factors (*Siklos*, 1994). One of its indicators can be identified using a method described by *Cukierman* (1992), which focuses on the characteristic features of its legal status. Using that indicator, *Karádi* (1999) identified three stages for the National Bank of Hungary. The first was the stage prior to 1991, when the central bank had not been independent in this country. It worked subordinated to the government, it had full commercial banking competence and fulfilled the tasks of a commercial bank in addition to its central banking functions. That was the mode of operation for a single-tier banking system.

The second stage was between 1991 and 1995, when the law on the central bank adopted in 1991 identified where and what part monetary control was to play within the framework of the market economy. Accordingly, the Governor of the central bank was accountable to the Parliament, and it was no longer identified as an organisation subordinated to the government. Thus, its independence was legally guaranteed, still it remained quite limited. The law on the one hand created the central bank as an independent entity outside the governmental structure of state administration, but on the other hand it stipulated, “MNB supports the implementation of the Government’s economic policy programme with the available monetary policy (monetary and credit policy) instruments.” (Act LX of 1991 on the National Bank of Hungary).

Measures introduced to achieve and maintain external equilibria were given emphasis in monetary policy (*Beaumont*, 1999a, 1999b; *Surányi–Vincze*, 1998). As they were introduced for “the protection of the internal and foreign purchasing

power of the national currency,” one can say it was an implicit requirement aimed to achieve price stability or at least to keep the rate of inflation as low as possible. At the same time, the wide range of how the Act could be interpreted identified instruments MNB could use beginning from 1991 to successfully implement any type of monetary policy and the relevant set of targets.

The introduction of a preannounced crawling peg exchange rate system in March 1995 represented the start of the third stage according to the indicators identifying the independence of the National Bank of Hungary (*Kopits, 1995; Jakab–Szapáry, 1998; Szapáry–Jakab, 1998*). It, however, had not been coordinated with the legal changes introduced. An amendment of the Act adopted in 1994⁴ provided a list of commercial banking activities MNB could be engaged in and clarified its tasks related to the central budget. Getting rid of the functions of a commercial bank liberated MNB from obligations that had been disturbing in terms of freedom of monetary policy and independence.

Narrow-band preannounced crawling peg exchange rate devaluation was implemented as part of a wider package of measures of economic stability jointly with other tax and duty measures. In terms of impact, all of that represented a more rigorous fiscal restraint.⁵

MNB published its first analysis “Report on the evolution of inflation” in November 1998 both in English and Hungarian (MNB, 1998). The report was published regularly. Such a document is a basic analytical tool of inflation targeting systems, and it is given special attention in all such systems.

The early publication of the inflation report in 1998 indicated the analytical work as a basic requirement of modern central banking activities had already been solidified in MNB. The practice of the regular publication of the report is, however, surprising.

Inflation reports play a special role in inflation targeting frameworks, but the Hungarian monetary policy framework at that time was not like that. Intentions to curb inflation by the Central Bank could be recognised in the Hungarian system but implementing fully fledged inflation targeting was in conflict with the elements of exchange rate targeting even in 2001, when officially inflation targeting was introduced in Hungary (*Siklós–Ábel, 2001*).

4 Act IV of 1994 amended Act LX of 1991 on the National Bank of Hungary and certain rules of the management of the central budget.

5 According to Article 13, Act of 2001 on the Central Bank, the Government establishes the procedure of identifying and influencing exchange rate in agreement with MNB. The right of agreement could be interpreted for the main framework in the crawling peg exchange rate system, but not for the decisions of MNB.

Analysing the 1990s by applying Cukierman's (1992) methodology to measure the legal independence of the Central Bank, Karádi (1999) found that MNB came close to the index expressing the independence of the Bundesbank following the 1996 law amendment (third stage). The maximum value of the index is 1, it was 0.67 for the Bundesbank, and 0.24 in 1979, 0.45 in 1991 and 0.63 in 1996 for MNB (Karádi, 1999:991).

Side by side with institutional and legal (*political*) interpretations, *instrumental* independence for the application of Central Bank instruments is worth considering for assessing its real independence. Analysing the figures from the period 1988 to 1993, Ábel-Siklos-Székely (1998) found that although the legal environment of MNB had failed to clearly declare its independence, econometric indicators of the reaction functions of the Central Bank assessing the interest rate decisions support that MNB was quite independent of political influence.

3 EVOLUTION OF THE INSTRUMENTS OF A MODERN CENTRAL BANK

A modern structure and instruments of a modern Central Bank were established in the decade from 1990 to 2000, but it had to be preceded by a reform of the banking system. As of 1 January 1987, commercial banks had been separated from the Central Bank.⁶ They conducted commercial lending while the Central Bank dealt with the establishment and implementation of monetary policy (money, credit, and foreign currency policies). In that way the National Bank of Hungary has lost its direct connection with the economic sphere and had become a Central Bank, the bank of banks and of the state. Thus, a two-tier banking system characteristic of the industrialised countries had been established in Hungary. There remained, however, a major setback. A proper recapitalisation of commercial banks required for supporting their functions had not taken place, and it became evident after the transition that the stability of the banking system could not be maintained without strong government intervention. The loan, bank and debtor consolidation conducted between 1991 and 1994 prior to bank privatisation cost public money creating a huge hole in the budget (*Langmár-Papp, 1996*).

MNB retained its monopoly over foreign currency deals following the banking reform, so it remained the central entity dealing with foreign loans and foreign

6 ÁBEL-SZAKADÁT (1997) discusses the characteristic features of banking performance and the steps prior to bank privatisation.

exchange operations. It continued to appear on international money and capital markets in the same way as the commercial banks.

During the banking reform, the commercial banks set up from the industrial and lending units of MNB were established in the form of joint stock companies and were authorised to engage in commercial banking activities (account management, collecting deposits and granting loans).

In the 1990s commercial banks operated independently of the Central Bank and provided lending to businesses and the population. During the decade, the Central Bank regulated the activities of financial institutions by managing the policy rate, the requirement of mandatory reserves for commercial banks, refinancing, and open market operations (buying and selling securities). Regulations could change from one year to the next, often representing administrative interventions in these areas. However, the direction of development was clear. By its regulations, the Central Bank was targeting normativity (rules based on the regulations rather than subject to individual assessment). (Balogh, 2009; MNB, 2001; Riecke, 1993; Surányi, 2001; Szalkai, 1995; and *Wagner*, 1998).

Cleansing its profile allowed to reduce staff from 2,700 typical in the first half of the 1990s to 1,300 by 2000. A significant turnover of employees had an even greater impact than staff reduction. Few of the “old guard” remained with the Bank. Some of them found new challenges and tempting opportunities at the new commercial banks. Also, up-to-date skills were required to perform the analyses necessary for new modern commercial banking functions, which was ensured by young new entrants. The Central Bank offered them attractive professional courses abroad and, in this country, to improve their skills.

Over five years passed from direct refinancing of the commercial banks by the Central Bank until a modern set of tools were born (1989-1995), even though MNB outpaced its counterparts in Central and Eastern Europe. It was racing ahead – using Johnson’s wording [op. cit., 2016:136].

4 TRANSFORMATION OF LIQUIDITY REGULATIONS AND INSTRUMENTS IN THE 1990s

In 1991 MNB replaced negotiations on the distribution of refinancing loans with auctions. That step involved a move from direct methods to indirect solutions. A chronological review of the steps taken by the Central Bank offers a convincing description of the process I will describe here following *Romhányi* (1999).

In preparation to the establishment of an interbank foreign exchange market, MNB introduced *a new procedure of exchange rate quotations* as of 9 December

1991, while the *currency basket* of HUF also changed. The interbank *foreign exchange market* started operations on 1 July 1992.

Retaining excess liquidity in the banking system promoted interest rate reduction beginning from 1992. Following the stabilisation of macroeconomic balance, MNB set the reduction of interest rates as its interim target in 1993 (*Hitelpolitikai irányelvek* [Credit Policy Guidelines], 1993; *Ursprung*, 1996:37). Monetary policy instruments included *refinancing*, *reserve policy*, *interest rate policy* and *open market operations* (Antal et al., 2001; Árvai, 1995). They were given different weight later, but a transition from direct methods (refinancing) to indirect ones (interest rate policy) was clear.

In 1993–94 the interim goal was to *maintain the level of real exchange rate*. Money market operations became dominant from 1993, which reflected the increase of their role. Banks received supplementary liquidity from MNB through *repo transactions backed by securities*.

Beginning from 1 January 1993, banks had to meet mandatory reserves with MNB at two-weekly averages rather than daily, which helped more flexible liquidity management.

Active and passive repo appeared on 8 January 1993 as a new instrument of liquidity management. Werner Riecke later remembered that crucial step with contentment. With that, the Central Bank allowed commercial banks to decide on liquidity management, i.e., refinancing had become “normative” for them based on regulations, on the other hand, it also had become of short maturity. Initially the commitment of the Central Bank offered liquidity support at diverse types of maturity from two weeks to a year. With time, commitment was reduced to two weeks both on the passive and active sides. Two considerations were in the background for that. If a central bank quotes interest rate for different maturities, there is a threat that the quotes will not be fully compatible with the interest rate quotes on the interbank and short-term treasury bill markets. The Central Bank could also assist financing the state budget by liquidity measures opening the so termed “repo-tap”. Opening the “repo-tap” meant the Central Bank provided funding to buy government securities via the repo. It took place subject to the following conditions. The time of a repo-auction had to be on the same day as the government securities auction or on the day preceding it. Repo expiration was identical to the maturity of government securities involved. Repo cost banks less than the profit earned on government securities. In addition, the switch to two-week maturity was also justified by the consideration that a Central Bank had stronger impact on interest rates at the shorter end of the money market.

MNB changed the terms of the repo scheme several times. Finally, it terminated passive repos for all maturities beginning from 6 October 1997 and introduced

Central Bank deposits instead of passive repos with the same terms and conditions. The reason for the change was that the Central Bank as a safe borrower did not need to give bonds to commercial banks to accept excess liquidity from them. The scheme of Central Bank deposits remedied the problem related to the renewal risk of passive repo, i.e., that its interest rate was too unstable in volatile periods. Acceptance of Central Bank deposits was fully suitable to absorb excess liquidity. It made life easier for the Central Bank, particularly because the portfolio of government bonds it held was reduced because of their sale to absorb excess liquidity from the banks. Foreign capital flowing into the country, foreign currency revenues from privatisation and partial financing of the state deficit from foreign currency debt meant that incoming foreign currency was converted to HUF, which also contributed to the increase of excess liquidity in the banking system. The net liquidity position of the Central Bank was continually positive beginning from the middle of 1995 to the end of the decade or even longer, which reflected that the Central Bank absorbed excess liquidity by accepting deposits or selling Central Bank bonds to banks.

Central Bank deposits were the most important instrument of MNB to absorb excess liquidity from 6 October 1997 till 2006. Commercial banks had different maturity options to place deposits with the Central Bank, but the overnight deposit was the most important instrument for liquidity management. Its interest rate regulated interbank rates at the lower edge of the interest rate corridor.

The availability of the Central Bank on the overnight market both on the deposit and refinancing sides was an organic part of the system. So, active repo and the interest on overnight deposits represented the two edges of the interest rate corridor.

MNB had been using longer-term deposits to influence longer yields until 1997, however, MNB bonds were introduced to replace them from the middle of the year. It had an advantage. MNB could influence longer yields with their help while bond schemes were more attractive for commercial banks than deposits as they could use them in repo transactions on the interbank market to ensure liquidity.

To sum up, the units controlled by Werner Riecke significantly modernised the instruments of the Central Bank for liquidity regulation in the decade beginning in 1990. Refinancing credits and provision of sources to commercial banks in the 1980s meant that the Central Bank intervened using its assets, granting credits rather than accepting deposits. This is called regulation by the active side and the practice was typical in most market economies. In Hungary, the inflow of capital resulted in a major surplus of liquidity in the economy the Central Bank left in the banking sector to ensure its funding. Although it absorbed excess liquidity from time to time, it made up for it if there was a shortage. It means the Bank intervened on either the active or the passive side in response to market needs.

Following the 1995 stabilisation, however, capital inflow generated by privatisation and other business investments resulted in long-term excess liquidity that the Central Bank intended to absorb. From then on, the Bank continually applied passive-side instruments for that purpose. The selection of instruments of liquidity management was adjusted to the needs of the banks. In other words, excess liquidity was absorbed by the Central Bank in the form of deposit acceptance or bond sales, while liquidity tensions could be mitigated by other instruments provided by the Central Bank. A significant difference from the perspective of the Central Bank was that it earned interest income on active-side instruments while it had to pay interest on the passive side.

Tenders were used to distribute active and passive repo instruments introduced in 1993 to provide commercial banks with liquidity, so the interest rate generated on tenders reflected the situation of the money market, and it reflected the market rate. The Central Bank used that market rate for its liquidity absorbing operations. It was trying to influence market rate trends mostly via influencing short-term rates.

The fixed but adjustable exchange rate regime which was used before 1995 in Hungary had two basic disadvantages. On the one hand, because of the uncertainties of adjustments and the peculiarities rooted in the decision-making process of the two decision makers (MNB and the Ministry of Finance representing the Government), the regime provided little indication regarding the future trends of exchange rates, so it could not anchor inflationary expectations. On the other hand, the schedule of adjustments could be anticipated sufficiently to entertain low-risk speculation transactions on devaluation. They included simple transactions of retaining export revenues or advance payment on import duties to derivative transactions, since forward, swap and futures transactions were already available on the Hungarian money and foreign currency market. Short-term maturity FX swaps have been among the instruments of the Central Bank since 1993. They had the same function as repo transactions, even their conditions matched those of repo transactions (*Bozó, 2000:86*).

To implement transition smoothly, economic policy had to keep close control over exchange rates. There were many arguments for it. Curbing inflation and maintaining the competitiveness of exports were equally important, however their aspects in terms of currency rates were the opposite. There had been a fixed exchange rate system in the first half of the 1990's, but the introduction of the narrow band crawling peg from 1995 represented a step forward to a broader band and then later to freely floating exchange rate regime.

Monetary policy had to face a peculiar challenge in that framework. While instruments used by modern central banks had been established during the decade, their application remained constrained by exchange rate considerations. Only

two out of the three requirements of an autonomous monetary policy (free flow of capital, free floating exchange rates and focus on inflation) could be achieved simultaneously.

Monetary policy instruments did include classical interest rate policy measures too, but exchange rate management was the crucial factor in reducing inflation.

The main challenge to monetary policy given its set of policy instruments and to ensure the inflow of capital due to economic policy considerations was presented by the sterilisation necessitated by excess liquidity generated by capital inflows. The necessity to absorb excess liquidity revealed the disadvantages of the scheme of the crawling peg exchange rate system and its increasing costs to the central bank to maintain it.

5 CLOSING REMARKS

I have only overviewed a small part of Werner's professional career in this paper. It does not cover other important activities, his research in other fields or his activities as an international advisor. He had a rich and versatile social and personal life too. He sometimes talked about his experiences in sailing or other events, but I only watched those from afar. Having known him up close, I can say his life was not easy, but he lived a full life despite his early death. He accepted difficulties in his stride and looked at happiness as a gift.

Werner Riecke passed away on 21 July 2021, not long after his 68th birthday on 8 June. It was not customary among us to celebrate birthdays together, so I did not see him on the last one, although we met quite often. I am sorry for that now. We shall miss him. To honour his memory, we must continue what he might have expected us to do if we can. Let us go forward and try to achieve what he would have thought important too.

REFERENCES

- ANTAL, JUDIT – BARABÁS, GYULA – CZETI, TAMÁS – MAJOR, KLÁRA (2001): Likviditásszabályozás az MNB cél- és eszközrendszerében [Liquidity control in MNB goals and instruments]. MNB Műhelytanulmányok, 22. <https://www.mnb.hu/letoltes/mt22.pdf>.
- ÁBEL, ISTVÁN – RIECKE, WERNER (1980): Árfolyam, nyereségérdekeltség és külkereskedelmi hatékonyság [Exchange rates, profit orientation and foreign trade effectiveness]. *Közgazdasági Szemle*, 27(2), 142–155.
- ÁBEL, ISTVÁN – RIECKE, WERNER (1981): A Model of Aggregate Inventory Behavior in the Hungarian Economy. In: CHIKÁN, A. (ed.) (1981): *The Economics and Management of Inventories*. Amsterdam: Elsevier Science Publishers, Akadémiai Kiadó, 13–28.
- ÁBEL, ISTVÁN – SIKLOS, PIERRE L. – SZÉKELY P., ISTVÁN (1998): Central Bank Independence in the Early Stages of the Transition. In: ÁBEL, I. – SIKLOS, P. – SZÉKELY, P. I. (1998): *Money and Finance in the Transition to a Market Economy*. MA, USA: Edward Elgar, Northampton, 145–172.
- ÁBEL, ISTVÁN – SIKLOS, PIERRE L. – SZÉKELY P., ISTVÁN (1998): *Money and Finance in the Transition to a Market Economy*. MA, Northampton (USA): Edward Elgar, 145–172.
- ÁBEL, ISTVÁN – SZAKADÁT, LÁSZLÓ (1997): A bankrendszer átalakulása Magyarországon 1987–1996 között [Transformation of the banking system in Hungary 1987–1996]. *Közgazdasági Szemle*, XLIV (7–8), 635–652.
- ÁRVAI ZSÓFIA (1995): A kötelező tartalékráta szabályozásának átalakulása [Evolution of regulating mandatory rates of reserve]. *Közgazdasági Szemle*, 42(2), 201–204.
- BALOGH, CSABA (2009): Az MNB monetáris politikai eszköztára [Monetary policy instruments of MNB]. Manuscript, MNB.
- BEAUMONT, CRAIG (1999a): Monetary Policy Framework for Disinflation and EU Convergences. IMF Selected Issues, 44–67. <https://www.imf.org/external/pubs/ft/scr/1999/cr9927.pdf>.
- BEAUMONT, CRAIG (1999b): Sustainability in the Hungarian Balance of Payment. IMF Selected Issues, 136–164. <https://www.imf.org/external/pubs/ft/scr/1999/cr9927.pdf>.
- BONIN, JOHN – SZÉKELY, ISTVÁN P. (eds.) (1994): *The Development and Reform of Financial Systems in Central and Eastern Europe*. Brookfield, VT: Edward Elgar.
- CHIKÁN, A. (ed.) (1981): *The Economics and Management of Inventories*. Amsterdam: Elsevier Science Publishers, Akadémiai Kiadó.
- CHIKÁN, A. – ÁBEL, I. – RIECKE, W. (1980): An Econometric Analysis of Aggregate Inventory Behavior in the Hungarian Economy. Előadás az V. Nemzetközi Előrejelzési Konferencián [Talk given at 5th international forecast conference] (Esztergom).
- COTTARELLI, C. – SZAPÁRY, GY. (eds.) (1988): *Mérsékelt infláció. Az átalakuló gazdaságok tapasztalatai* [Moderate inflation, Experience of economies in transition]. Budapest: Magyar Nemzeti Bank [MNB].
- CUKIERMAN, A. (1992): *Central Bank Strategy, Credibility and Independence*. Cambridge (MA): MIT Press.
- FARKAS, ZOLTÁN (2021): Elhunyt Riecke Werner, a Magyar Nemzeti Bank korábbi alelnöke [Werner Riecke former deputy governor of MNB passed away]. *Gazdaság: Elhunyt Riecke Werner, a Magyar Nemzeti Bank korábbi alelnöke* | hvg.hu.
- JAKAB, ZOLTÁN – SZAPÁRY, GYÖRGY (1998): A csúszó leértékelés tapasztalatai Magyarországon [Crawling peg devaluation in Hungary]. MNB Füzetek, 6. https://www.mnb.hu/archivum/Kiadvanyok/mnbhu_mnbfuzetek/mnbhu_MF1998_6.
- JOHNSON, JULIET (2016): *Priests of prosperity. How Central Bankers Transformed the postcommunist World*. Ithaca, N. Y.: Cornell University Press.

- KARÁDI, PÉTER (1999): Jegybankfüggetlenség Magyarországon [Independence of the central bank in Hungary]. (1990–1999). *Közgazdasági Szemle*, XLVI(11), 969–992.
- KOPITS, GEORGE (1995): Hungary's Preannounced Crawling Peg. *Acta Oeconomica*, 47(3–4), 267–286.
- LANGMÁR, FERENC – PAPP, EMÍLIA (1996): Bank consolidation Körhítel [Loan carousel] https://magyarnarancs.hu/belpol/bankkonszolidacio_korhital-61912.
- MNB (1998): Jelentés az infláció alakulásáról. [Inflation report]
- MNB (2001): Az MNB tevékenységének átalakulása, [Transformation of MNB activities] 1995–2000. <https://www.mnb.hu/letoltes/mnbtev19952000-hu.pdf>.
- MNB (2007): A Magyar Nemzeti Bank tevékenysége, [MNB activities] 2001–2007. <https://www.mnb.hu/letoltes/mnb-tevekenysege.pdf>.
- MNB: Tájékoztató az Országgyűlés részére az évi pénz- és hitelpolitikai irányelvekről [MNB: report to Parliament on annual money and credit policy guidelines]. MNB Budapest, different years. https://www.mnb.hu/archivum/Kiadvanyok/mnbhu_inflacio_hu/korabbi-kiadvanyok-1998-2014-marcius-ig/mnbhu_inf9811.
- PIROSKA, DÓRA (2017): Központi bankok és bankárok Kelet-Európában [Central banks and bankers in Eastern Europe]. Book review of JULIET JOHNSON: *Priests of Prosperity. How Central Bankers Transformed the Postcommunist* (World Cornell University Press, Ithaca, N. Y., 2016). *Közgazdasági Szemle*, LXIV (4), 448–452.
- PIPER, ROSEMARY – KIRÁLY, JÚLIA – SZÉKELY P., ISTVÁN – ÁBEL, ISTVÁN – RIECKE, WERNER – SZAKADÁT, LÁSZLÓ (1994): A pénzügyi szektor reformja a piacgazdaságra való átmenet időszakában Magyarországon [Reform of financial sector in Hungary in the period of transition to market economy]. Budapest, Hungary: Kék Szalag Bizottság Alapítvány.
- RIECKE, WERNER – ANTAL, LÁSZLÓ (1993): Hungary: Sound Money, Fiscal Problems. In: RICHARD PORTES (ed.) (1993): *Economic Transformation in Central Europe: A Progress Report*. 107–30. Budapest: Centre for Economic Policy and Research.
- RIECKE, WERNER (1993): A monetáris politika céljai és eszközei [Objectives and instruments of monetary policy]. Manuscript, MNB.
- RIECKE, WERNER – SZALKAI, ISTVÁN – SZÁZ, JÁNOS (1981): *Tanulmányok az árfolyamelmélet és árfolyampolitika témaköréből* [Studies on exchange rate theory and exchange rate policy]. Budapest: Pénzügykutatási Intézet.
- RIECKE, WERNER – SZALKAI, ISTVÁN – SZÁZ, JÁNOS (1985): *Árfolyamelméletek és pénzügypolitika* [Exchange rate theories and financial politics]. Budapest: Közgazdasági és Jogi Könyvkiadó.
- ROMHÁNYI, JÓZSEFNÉ (1999): A Magyar Nemzeti Bank történetének kronológiája, Budapest: [Chronological history of MNB] MNB, June.
- SIKLOS, PIERRE (1994): Central Bank Independence in the Transitional Economies: A Preliminary Investigation of Hungary, Poland, the Czech and Slovak Republics. In: BONIN, J. – SZÉKELY, P. I. (eds.) (1994): 71–98.
- SIKLOS, PIERRE. L. – ÁBEL, ISTVÁN (2001): Is Hungary ready for Inflation Targeting? *Economic Systems*, 26(4), 309–333. https://www.researchgate.net/publication/222189290_Is_Hungary_Ready_For_Inflation_Targeting.
- SURÁNYI, GYÖRGY (2001): Transformation of the Activities of the National Bank of Hungary 1995–2000. <https://www.mnb.hu/letoltes/mnbtev19952000-en.pdf>.
- SURÁNYI, GYÖRGY – VINCZE, JÁNOS (1998): Infláció Magyarországon, [Inflation in Hungary] 1990–1997. In: COTTARELLI, C. – SZAPÁRY, GY. (eds.) (1988): *Mérsékelt infláció. Az átalakuló gazdaságok tapasztalatai* [Moderate inflation, Experience of economies in transition]. Budapest: Magyar Nemzeti Bank, 150–170.
- SZALKAI, ISTVÁN (1995): *A monetáris irányítás*. [Monetary control] Budapest: Bankárképző.

SZAPÁRY, GYÖRGY – JAKAB, M. ZOLTÁN (1998): A csúszó leértékelés tapasztalatai Magyarországon [Cracling peg devaluation in Hungary]. *Közgazdasági Szemle*, XLV (10), 877–905.

URSPRUNG, JÁNOS (1996): A kétszintű bankrendszer fejlődése Magyarországon [Evolution of a two-tier banking system in Hungary], 1987–1995. <https://doksi.hu/get.php?lid=26532>.

WAGNER, HELMUT (1998): Central Banking in Transition Countries. Working Paper 98/126, International Monetary Fund.

Act LX of 1991 on the National Bank of Hungary.

Act CXXIX of 1996 on the amendment of Act LX of 1991 on the National Bank of Hungary.