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‘Captivated by Liquidity’ – Theoretical Traps and Practical Mazes

SUMMARY: There is no uniform theoretical standpoint on the effects of changing interest rates and the role of money among economists. Though these disputes exercise a great influence on the economic policy measures adopted as well. For the management of the 2008 global financial crisis many central banks entered into forceful interest rate cuts to contribute to the revitalisation of the economy. The economic recession caused by the pandemic of 2020 again raises the issue how central banks can stimulate growth. In this study we deal with the liquidity trap issue attributed to Keynes. Keynes pointed out that there might exist a lower interest rate limit under which money demand becomes infinite. His conceptions put the foundations to the question, at what interest rate levels might the liquidity trap – a term coined later by Robertson – phenomenon become effective. He was followed by numerous renowned economists dealing with the conception. In this paper we are discussing the most important theoretical approaches – among others the views of Hansen, Hicks, Tobin, Patinkin, Krugman, Brunner and Meltzer and Eggertson. We provide an overview on the effects of low interest rate levels adopted by Japan, by the central banks of Japan, the USA and the ECB aimed at stimulating the economy. Based on the study it can be confirmed that central banks can contribute to economic growth keeping interest rates low and therewith fostering investment. Nevertheless, beyond keeping short-term interest rates low, it might be adequate to control interest rates of other maturities and, especially under deflationary expectations, central banks should express their prolonged commitment to low interest rates.

KEYWORDS: money demand, lower interest rate bound, deflation, expectations, monetary policy

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The question whether monetary policy is able to contribute to economic recovery arises in times of crisis. It is a fundamental assumption that keeping interest rates low can contribute to the growth of investments. However, in the debates provoked by low interest rate levels, the concept of ‘liquidity trap’ is often used.

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There are assumptions that the liquidity trap could hinder the efficacy of monetary policy.

The theory of money was integrated into the general economic theory by *Keynes*. He broke away from the dichotomy approach used by the classical and neoclassical economists. With regard to the main pillar of the monetarisation of the economy, the introduction of the liquidity function is linked to Keynes (Gupcsi–Tarafás, 1983). According to Keynes, there is an

interest rate threshold under which the money demand becomes infinite. The ‘liquidity trap’ term itself – although it is attributed to Keynes – is in fact owed to *Robertson*, who interpreted and criticised Keynes. In his work titled ‘Essays in Monetary Theory’, Robertson (1940)¹ referred to the phenomenon as ‘*liquidity is a trap for savings*’, i.e. the savings concentrate in funds and do not finance the investment activity, therefore, in contrast to Keynes and his followers, Robertson did not object to the excessive extent of liquidity but to the lack thereof.

Today the phenomenon understood as liquidity trap by economists across refers to the case where the interest rates are restricted by lower bounds in the economy, the room for manoeuvre of monetary policy is narrowed by deflation expectations and where the decreasing price level – in particular if it goes hand in hand with the appreciation of the already high debt – could push the economy into a prolonged recession easily.

As a result of the 2008 financial crisis, numerous central banks decreased their interest rates. In a number of countries, the interest rates dropped to zero, or even became negative in some cases. The debates about how these affect savings and economic growth became more prominent. When the signs of recovery from the crisis appeared, a lot of experts called for the ‘normalization’ of interest rates. The economic crisis caused by the 2020 coronavirus epidemic once again raises questions for the economic policy-makers about how to stimulate the economy. Presumably, the maintenance of low interest rates will continue to be a central bank practice. As a result of these, the debates about the liquidity trap and the impact of low interest rates are expected to remain on the surface.

Since in a *Public Finance Quarterly* article *Pesuth* (2016) – while quoting *Fischer* (2013) –

had already drawn attention to the importance of the historical overview being crucial for the determination of central bank activity, our study reviews the history of the theoretical background of the questions related to the liquidity trap. We examine the cases which were developed by practical economic policy based on these, and which could provide lessons for the future in the recovery process following the coronavirus crisis.

LIQUIDITY TRAP APPROACHES

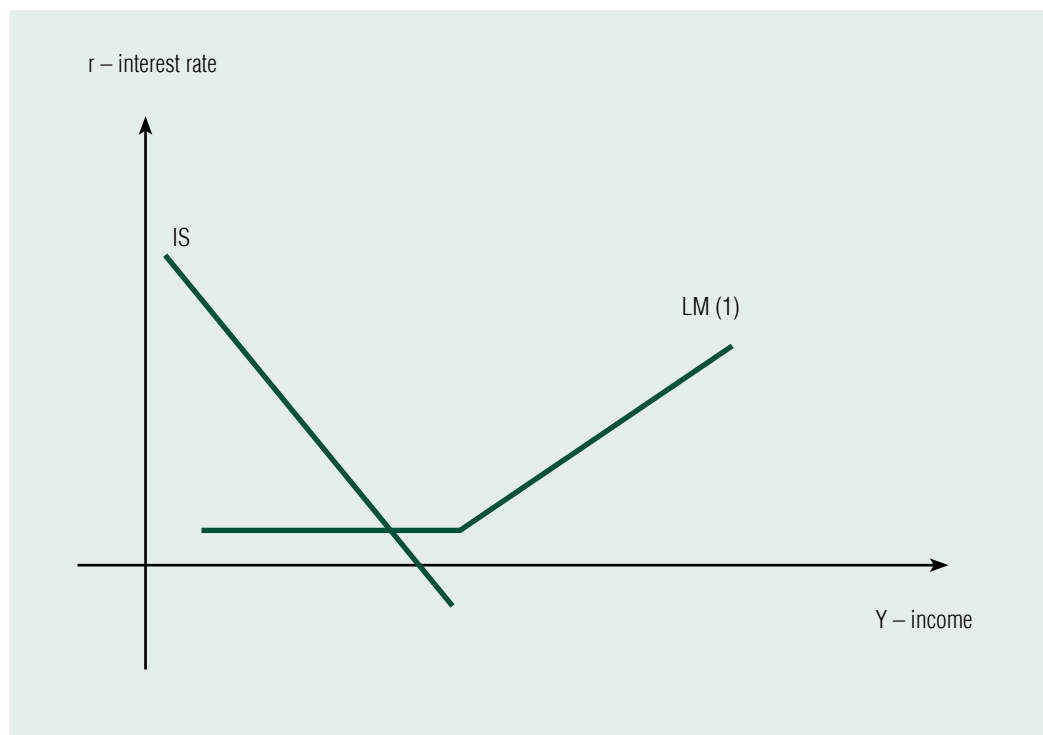
The concept of the liquidity trap can be traced back to Keynes’s thoughts elaborated in his work titled ‘The General Theory of Employment, Interest, and Money’ (Keynes, 1936; 1965). As explained therein, when accumulating money, individuals consider the advantages of giving up liquidity. The quantity of money held by every person cannot be changed. All the economic actors combined can change only the interest rate at which their intention to hold cash is equal to the total amount of money. Interest is the price of refraining from accumulating money for speculative purposes. Depending on their expectations, economic actors are potentially also willing to hold a specific amount of money which is determined by the speculative pattern. The actual cash held depends on the conditions subject to which the financial authority creates the amount of cash concerned. Keynes thought that the interest rate could not drop to zero either, considering that there is a cost to bringing lenders and borrowers together, and the psychological factors arising from uncertainty do not allow the interest rate to drop that low. Keynes considered this limit to be at 2–2.5 percent, in which case the interest rate elasticity of the speculative money demand could become infinite, i.e. having bonds would be replaced completely by the accumulation of money.

The phenomenon of the liquidity trap became a commonly known concept with the help of the IS-LM curves² drawn up by Hicks, which curves were later widely criticised for linking *stock* and *flow* processes, while ignoring the role of expectations, and for simplifying Keynes' theory in general (Hicks, 1937; Ábel, 2019; Brady, 2018). Hicks (1974) however evaluated his own approach as partially approved by Keynes himself, and through this abstraction, he contributed to the textbook-level interpretation of Keynesian theory. The LM curve shows the interest rate and output level at which money demand and money supply are in balance. The LM curve becomes horizontal below a given interest rate,

which means that money demand is perfectly interest elastic, monetary policy intervention is ineffective in terms of output and it is unable to stimulate economic performance (see *Figure 1*). Hicks interpreted this lower interest rate bound for the short-term interest rates, in contrast to Keynes' assumption that the theoretical lower bound occurs in case of long-term maturities. Hicks elaborated how the effectiveness of monetary policy was compromised by the lower interest rate bound in the framework of his theoretical system for the elasticity of interest rate expectations and price expectations, in his work titled 'Value and Capital' (Hicks, 1939; 1946). Hicks' economic views were commended

Figure 1

THE IS-LM CURVE SYSTEM



Note: The figure is based on the simplified linear case, which is close to Lange's interpretation.

Source: Based on Krugman (1999), own edited

by – among others – *Leijonhufvud* (1984) and *Boianovsky* (2004), highlighting Hicks' references related to the money-creating role of the banking system, which were in line with the endogenous approach to monetary theory.

In *Lange's* graphical depiction – which was developed independently of Hicks – the LM curve appears as an isoliquidity curve (interest rate and income combinations representing the same liquidity) as well. Lange understood Keynes' limit case as the interest rate elasticity of the liquidity demand becoming infinite, i.e. in this case the isoliquidity curve becoming horizontal. This graphic approach provided a point of reference for the application of the simplified linear IS-LM curve.

Modigliani (1944) interprets the LL curve in a way similar to Hicks, and attributed the lower interest rate bound to the transaction costs, based on Hicks' work titled 'Value and Capital'. *Samuelson* (1967) depicted the end of LM curve stretching to the left as not being slightly positive but approximating to zero, probably based on some short-term interest rate – such as that of treasury bills – as the alternative cost of money (*Boianovsky*, 2004)

Hansen's LM curve is very similar to the curve in Hicks' original concept. Hansen's (1953; 1965) bound interpreted in case of long-term interests is intended to represent the decrease in the liquidity premium occurring together with the decrease in the interest rate. Furthermore, following on Keynes Hansen concludes that – assuming risk-averse investors – the interest rate elasticity of money demand increases if the interest rate converges to zero. Namely, along with the decrease of the interest rates there is increased risk that the bonds and other fixed-income investments would generate exchange rate losses in the future when the interest rates start to rise again. However, an increase in the money supply does not necessarily go hand in hand with decreasing interest rates and recovering

investments if the demand for liquidity expands more dynamically. The demand for liquidity is mostly determined by the marginal efficiency of capital and thus ultimately by the development of the economic boom. In case of recovery, the willingness to hold money decreases, while in times of crisis the willingness to accumulate intensifies.

Money differs from other investment instruments in that its interest rate is fixed by law, therefore changes in the money supply do not affect the interest rate of money (*Tobin*, 1971; 1984), *Szepesi*, 1984; 8–9). *Tobin* (1971) emphasised that the lower interest rate bound is in fact the reason why there is no balance between investments and savings, provided that the increased demand for money inhibits the formation of real capital (*Boianovsky*, 2004). The oversupply of money in excess of the demand for money, i.e. the so-called *Fellner trap*, transforms into a Keynesian (i.e. liquidity) trap in case of infinite demand for money as the lower interest rate bound is reached (*Tobin*, 1971; 1984).

The formulation of the version of the Keynesian neoclassical synthesis which is included in the final theorems is credited to *Patinkin* (1956) (*Rubin*, 2008).³ According to *Patinkin*, in Hicks', *Modigliani's* and *Hansen's* interpretation, at a given level of unemployment, equilibrium can be achieved in case of continuously decreasing prices if the interest rate remains unchanged, i.e. if the liquidity trap occurs. In fact – in the opinion of *Patinkin* (1974) – Keynes took this as a situation of imbalance, and according to this approach it is not the infinite interest rate elasticity that is decisive but partially the high interest rate elasticity of the money demand, combined with the low interest rate elasticity of investments, and partially the effects related to the expectations and the distribution of income (if the real balance effect is disregarded). From here, it is unlikely

that the full employment equilibrium would recover quickly through the self-regulating behaviour of the market. Furthermore, having overhauled Hicks' views, Patinkin also concluded that the liquidity trap is not a consequence of the money demand function but can rather be attributed to the increased liquidity in the securities market (Boianovsky, 2004). According to Leijonhufvud (1984; 1987), it follows from the contradiction of the relationship between the IS (flow) and the LM (stock) that in a system assuming a joint commodity and money market equilibrium, we forget about a series of events within the period between two equilibrium states, which causes difficulties for comparative static analyses in particular. Due to the erroneous traditional interpretation of the IS-LM curve, movement in one curve does not affect the other, in the Lucasian world of rational expectations, however, this does not hold, and not even does for the equilibrium that emerges in the adaptive Friedmanian case. When monetary policy measures are anticipated, both curves shift – see for example, the effect of the changes in the quantity of money – which implies that the different interest rate elasticities of the two curves are irrelevant for the monetary transmission in general and for the liquidity trap in particular. According to *Krugman* (1998), previous approaches to the liquidity trap are inappropriate because they do not take into account the intertemporal decisions, the openness of the economic or the financial intermediaries, and for this reason *Krugman* did not consider the approaches based purely on (static or comparative static) IS-LM analysis to be appropriate, but he strived for a more general interpretation. In *Krugman's* (1998) model drawn up for the interpretation of the liquidity trap and assuming a dynamic, pure (closed) endowment economy with a cash-in-advance constraint, after a certain point the increase in

the quantity of money – in case of given long-term money supply and price expectations for the coming periods – has no effect on the price level if the ('one-period') nominal interest rate is zero. At the zero lower (interest rate) bound the liquidity constraint is no longer binding, as money also has a store of value function. Money and bonds become perfect substitutes for each other, and the monetary policy cannot redirect the economy towards full employment through open market operations. In this case, the liquidity trap occurs when the agents of the economy rely on deflationary expectations or, due to their time preference – the marginal utility of future consumption is higher than in the current period – that is the economy is characterised by a negative natural interest rate. The expected deflation can be triggered by, among others, exogenous expectations related to future production capacities, for example, as a result of declining demographic trends (*Werner*, 2005). According to *Krugman* (1998), the liquidity trap may also exist in case of an open economy and in a model drawn up and extended to the financial intermediation system.

THE EFFECTIVENESS OF MONETARY POLICY AND THE LOWER INTEREST RATE BOUND

As a result of Hicks' work, it became commonly known that the lower interest rate bound in fact prevents control over the money supply when prices drop. '*... we may say that interest policy – which is monetary policy – gets very high marks as a means of checking booms, but very low marks as a means of checking slumps.*' (*Hicks*, 1939; 1946; 263). Thus, in the end the Hicksian interpretation of the liquidity trap is understood as the state in which monetary policy becomes ineffective in case of low interest rates and where the

monetary expansion does not help boosting the economy (*Figure 2*).

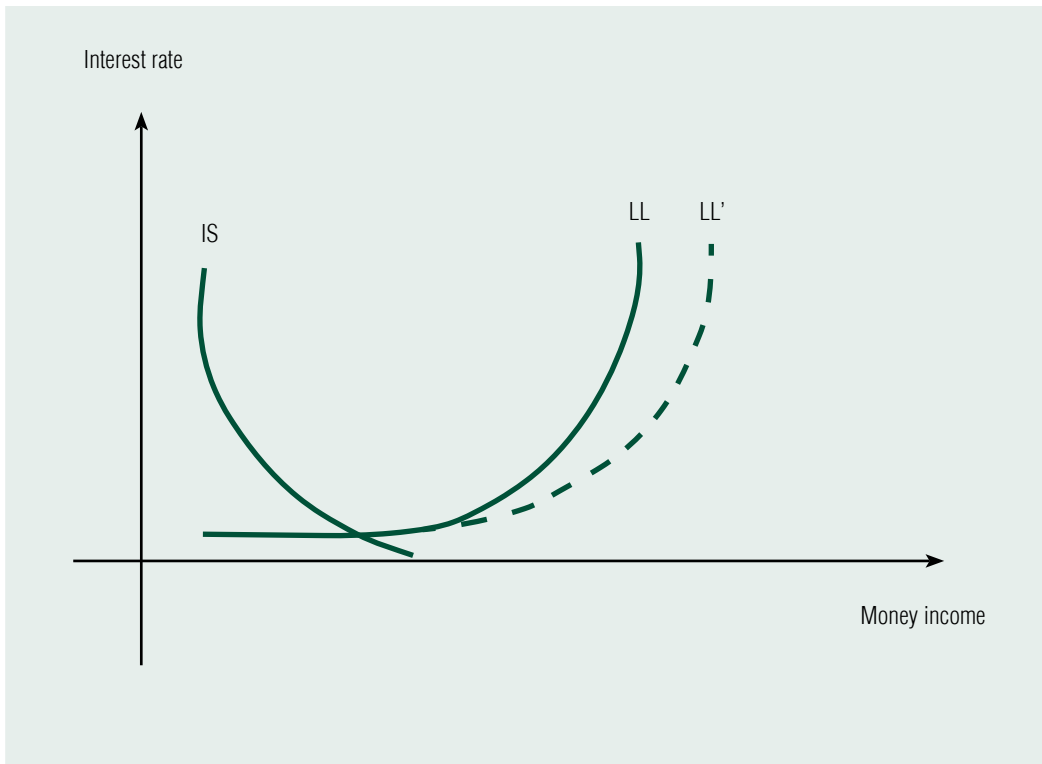
Patinkin (1974) argues that according to Keynes’s original interpretation it is certainly true that the greater the interest rate elasticity of money demand is, the greater the monetary expansion is required to restore balance, moreover, beyond a certain point, monetary policy may become ineffective. Nevertheless, Patinkin argued that Keynes presumed the case where monetary policy was ineffective only in theory, in fact, Keynes in turn claimed that there might be a situation where the interest rates which decline along with wages do not decline to the extent necessary to restore the labour market equilibrium. Nevertheless,

according to Patinkin (1965), the real balance (while influencing consumption through changes in price levels or the amount of money) or – as Patinkin called – the Pigou effect enables effective monetary policy intervention even in the event of a liquidity trap (Ireland, 2005).

Two monetarists, *Brunner and Meltzer* (1968) proved through elasticity calculations that a liquidity trap in the absolute sense does not really exist, and at most ‘asymptotic traps’ can emerge when the efficacy of the monetary policy variables converges to zero. In their opinion, the liquidity trap should be separated from the outset according to the effects of monetary policy on the money supply, the

Figure 2

ILLUSTRATION OF EXPANSIONARY MONETARY POLICY WITH HICKS’ LL CURVE



Source: Based on Hicks, 1937, 153., own edited

interest rates, the bank loan supply and the money demand. They introduced a separate term, the ‘base trap’, to be used to describe the case where the central bank unsuccessfully tries to influence the variables mentioned above by increasing the M0. Brunner and Meltzer (1968) prove that although the size of money supply and demand in the USA in the late 1930s fell short of its statistically estimated value⁴, the liquidity trap did not appear in their opinion. They drew the final conclusion that if there are three different types of instruments that are not perfect substitutes – money, bond, capital – then this cannot happen (Meltzer, 1999).⁵

Later Meltzer (1999), with reference to his 1968 study written jointly with Brunner, emphasised that attention should be paid to the positive impact of the money supply on the price of securities. Thus, attention should be paid to the relationships between the money supply and wealth if financial instruments are not perfectly interchangeable, in the same way McCallum, among others, showed it for foreign and domestic assets, as did Tobin for capital goods and bonds. Namely, this effect on assets is missing from the IS-LM analyses.

In addition, Meltzer established that the monetary base is a better indicator for the stance of monetary policy than the interest rate level, as the latter is highly dependent on the credit demand of the private economy. From this, Meltzer deduced that the monetary policy could remain effective regardless of whether the interest rate reaches the lower limit, since the central bank can sell and buy securities, which are not perfect substitutes for money and do not have zero interest rates. Meltzer also supported this argument by historical examples.

The limited efficacy of monetary policy soon raised the interest of the representatives of the modern economic theories based on rational expectations, and it was featured

prominently in macroeconomic textbooks as well (see, among others, Blanchard, 1997; Walsh, 2003). According to the generally accepted liquidity trap approach supported by these macroeconomic models, in case of deflationary expectations, the real interest rate has a lower bound. Therefore if monetary policy is committed to a policy following some kind of a Taylor or similar rule, then it can be shown that the nominal lower bound can lead to a self-fulfilling deflationary spiral, which the monetary policy cannot escape (Boianovsky, 2004; Whelan, 2020).

Krugman upholds his assumption related to the inefficacy of monetary policy in case of liquidity trap only if the money supply is given in the long run, i.e. if the economic actors consider the actual expansion of the money supply as temporary. If the increase in the quantity of money can be considered permanent the price level will increase given flexible or the output will expand given sticky prices even in case of zero nominal interest rate. Based on the Japanese example, in this context the issue of the liquidity trap raises the issue of the ‘credibility’ of economic policy, i.e. monetary policy is ineffective only if the economic actors trust that the increase in money supply is only temporary. If the monetary policy is able to convince the agents to be permanently ‘irresponsible’, then it can be a way out of the liquidity trap (Krugman, 1998).

Eggertsson and Woodford (2003) were also inspired by the Japanese example when they defined a monetary policy to be applied in case of a zero lower threshold. In their New Keynesian model – which assumes complete financial markets and borrowing opportunities covered by unlimited future income – Eggertsson and Woodford prove that even open market operations – including unconventional intervention – are ineffective if they are unable to change the economic actors’

expectations regarding the expected direction of economic policy. Although they did discuss the portfolio-balance approach referred to by Meltzer as well⁶, however, they ignore the impact thereof. For Eggertsson and Woodford, the optimal policy is embodied in an interest rate policy that changes over time and which aims at a price level consistent with the liquidity trap. Eggertsson and Woodford make recommendations not for a specific period but regarding the future trajectory of the interest rate policy and staggered pricing, so that a zero lower bound remains a relevant factor which limits the room for manoeuvre of monetary policy in the entirety of the optimisation horizon. According to Eggertsson's (2008) DSGE model, monetary policy could be effective despite reaching the lower bound, provided that the central bank commits itself to low interest rates until the performance of the economy recovers after the recession. In this case, the expectation channel could be strong enough to prevent the occurrence of a liquidity trap. Eggertsson bases his result on the efficacy of the political regime change introduced during the 'Great Depression'. In response to the 2007–2008 global financial crisis, Eggertsson and Krugman (2012) show in a New Keynesian model framework how an economy burdened by indebtedness drifts into crisis, i.e. how the balance sheet recession of debtors due to the shock hitting financial markets leads to a decrease in interest rates, which can trigger the occurrence of a liquidity trap.

Over the last decade, in the wake of the 2008 global financial crisis, a number of other studies discussed the optimal fiscal and monetary policy measures to be taken in the event of a liquidity trap (or zero lower bound) (see, among others, Mertens-Ravn, 2010; Eggertsson, 2011; Christiano et al., 2011; Cook-Devereux, 2011; Werning, 2012; Correia et al., 2013) and the importance of

the macroprudential policy (Korinek-Simsek, 2014). The New Keynesian macro models which include liquidity friction often arrive to the conclusion with regard to the monetary policy that when nominal interest rates cannot be reduced further, the central bank can prevent the formation of a liquidity trap by continuously increasing the availability of liquidity (see, inter alia, Del Negro et al., 2017).

PRACTICAL CASES OF THE LIQUIDITY TRAP PHENOMENON

Keynes based his liquidity trap theory on the empirical phenomenon that in the years following the 1929–33 worldwide crisis, the attempts to boost the economy or stimulate investments failed despite moderate interest rates. The theory remained in the spotlight until the 1960s, however, it seemed to lose its relevance due to the subsequent period of high inflation. Analyses related to the liquidity trap were given a new momentum by the deflationary spiral in the Japanese economy after the bursting of the Japanese financial bubble, starting from the early 1990s. Before that, the Japanese monetary policy relied fundamentally on the endogenous monetary theory, however, as it was pointed out later by Ueda (2001) among others, with near-zero interest rates, as a result of the liquidity trap and from the point of view of the quantity theory of money, the velocity of circulation of money decreased in the Japanese economy in the 1990s. This questioned the belief in the endogenous monetary theory, therefore increasing the monetary base lost its relevance. According to Krugman (1998), the Japanese 'liquidity trap' manifested in the fact that even though the central bank increased the monetary base in the Japanese economy, the deposit aggregate in the broader sense, the

M2+CD (certificate of deposit), did not grow enough (Werner, 2005). This recalled one of the crisis phenomena of the 1929–33 period, which was accompanied by an insufficient expansion of the M2 aggregate.

In Japan, the increase in the quantity of money did not even cause the proportional price increase assumed in case of money neutrality, in addition, it did not essentially have any effect on the performance of the economy (Krugman, 1998). With respect to the situation in Japan, Krugman recommended that the inflation expectations were stimulated, along with a commitment to an inflation target, as a result of which real interest rates could drop to negative levels and the economic actors would not think that the central bank interest rate cuts were temporary. Krugman recommended that Japan applied an annual inflation rate of 4 percent for fifteen years, in order to recover from the liquidity trap (Krugman, 1998; 181). However, Krugman forgot that the central bank already had the right to set negative interest rates for certain money market instruments – such as excess reserves – and has the right to use instruments other than interest rate policy – for example asset purchases – in order to regulate the quantity of money (Werner, 2005).

According to Ueda (2001), due to a lack of credibility, the monetary policy measures do not work in the case of a liquidity trap. Ito (1999) and Kumar *et al.* (2003) also attribute the weak performance of the Japanese economy since the 1990s to the liquidity trap phenomenon, as Ito (1999; 4) put it '*a situation like this is termed a liquidity trap in Keynesian economics*', however, they return to the Hicksian approach, when they refer to a horizontal LM curve. Furthermore, Ito (1999) also mention in support of their arguments that the expansion of the monetary base was not followed by sufficient growth in

the M2 aggregate, and a decline in interest rates. Itoh–Shimoi (2000) consider the fiscal intervention to be reasonable, complemented by bond purchases by the central bank, which altogether would result in an intervention similar to 'helicopter money'. Another solution considered possible is that the central bank announces an inflation target, which target is set with not only an upper but also a lower bound, so that no liquidity trap occurs. In the liquidity trap case, as they assert, the Fisher equation does not hold and inflation does not cause an increase in the nominal interest by the same rate, thereby preventing the real value of high corporate and public debts from decreasing.

On behalf of monetarists, Meltzer (1999) attributed the failure to boost the economy to the lack of credibility of Japanese monetary policy, since – in his opinion – the central bank announces that its goal is to stop deflation and bolster up growth to no avail if the central bank's inability to achieve these goals becomes built in the economic actors' expectations. Namely, Meltzer's interpretation was similar to Krugman's arguments in that the transmission mechanism did not function properly in Japan due to the expectations. Meltzer recommended that the monetary base was increased in order to enhance consumption, while relying on the real balance effect. McKinnon–Kenichi (1999) recommended the announcement of an exchange rate target, arguing that due to the liquidity trap, expectations cannot be used as a channel to affect the economy, and urged joint US–Japanese intervention in the foreign exchange market (Werner, 2005). According to Svensson's (2001) 'foolproof' solution for open economies, a path for future price level targets should be announced in the Japanese economy, which target should correspond to a moderate long-term positive inflation target, also complemented by a one-time larger

devaluation of the currency and a temporary fixed exchange rate (in a crawling peg) regime.

As a result of the economic policy applied, the quantity of the broader monetary aggregates in Japan did increase significantly since 1992, however, it was still unable to facilitate economic growth enough, which undermined the steady foundation of the quantity theory of money. In a number of publications BOJ itself acknowledged the ineffectiveness of monetary policy, and it entrusted the fiscal policy to recover the economy.

Werner (2005) refuted the idea that the failure of the Japanese economic policy could be explained by a liquidity trap or by an exogenous or endogenous monetary theory. Werner argues that Japanese interest rates had been gradually declining before 2001, which means that the left-horizontal section of the LM curve being flat for a stretch cannot be verified. Gradually declining interest rates did not boost the economy either, while the interbank call rate – which was reduced to less than 0.1 per cent – from 1998 failed as well (not to mention that interest rates were even increased occasionally). Werner emphasises that the liquidity trap is a comparative static analysis. It compares the case where interest rates can no longer be reduced to the economy boosting effect achieved through interest rate cuts, and the analysis does not explain how the economy arrived at the situation limited by the lower interest rate bound. According to Werner, the reason behind the Japanese phenomenon is not the liquidity trap but the fact that in the quantity theory of money, the quantity of money used for the exchange of goods and services included in GDP and the quantity of money used exclusively for the purchase of assets are not distinguished. And although the latter is line with the expected growth of the overall amount of credit, it does not shift the income and the general price level to the expected favourable direction. Instead,

it precipitates in the market of various assets – such as real estate – and thereby creates an asset price bubble.

The base rates and other short-term interest rates which were reduced close to zero (or even lower) in numerous regions due to the 2008 global financial crisis raised the liquidity trap issue in wider scope. The spreading of quantitative easing and forward guidance by central banks also indicated this macroeconomic problem.

After reducing the short-term interests even further became impossible, central banks mitigated the long-term interests through quantitative easing. Although this type of intervention by central banks was supported by the practice, it is actually difficult to justify in theory; the central bank signalling itself and then the shift of the portfolio towards longer-term securities – and therewith the deceleration of asset sale waves occurring due to the interest rate reduction – are the two main channels of the mode of action of central bank intervention (Ábel, 2019). If the yields drop so low that investors are no longer willing to buy longer-term assets for fear of yield expectations but only want to keep cash, a liquidity trap may emerge. In this case, the central bank can intervene most efficiently with forward guidance because in this way it can reduce future uncertainty (Ábel, 2019).

Using the DSGE models, researchers have shown that in 2008–2009, approximately 30 percent of the economic downturn was attributable to the lower interest rate bound (Lhuissier et al., 2020). In the DSGE models, the interest rate rule steers the economy towards the lower bound due to the negative demand shocks, which causes the economy to lose its key adaptation ability and could enter a deflationary spiral. While monetary policy loses some of its role in this case, fiscal policy may still be able to stimulate the economy, especially if interest rates do not rise, not even

as a result of the intervention. In reality, there is no reason to interpret rational expectations so strictly, and monetary policy has numerous options for adjustment through the adjustment of various interest rates of different maturities and the use of asset purchases and other unconventional instruments, with the help of which expectations related to short-term interest rates, credit, maturity and liquidity premia can be influenced.

Many criticise the use of unconventional instruments to prevent a liquidity trap, arguing that these instruments are costly, since they are far less effective as the conventional interest rate cut. Nevertheless, a series of studies verified that quantitative easing had helped restore the inflation and the output at low interest rates [Gambacorta, Hofmann, & Peersman, (2014); Panizza, Wyplosz, (2018); Weale, Wieladek, (2016); Koeda (2019); Kimura, Nakajima, (2016)]. Altavilla, Giannone, and Lenza (2014) found that it was verified in case of OMT announcements (Outright Monetary Transactions) that the monetary policy could be able to provide a suitable solution through its unconventional instruments, even if an effective interest rate bound is set.

The empirical study of Lhuissier et al. (2020) analyses those periods during which the nominal interest rate – even if negative – reached its effective lower bound in the euro area, in the United States and in Japan. Lhuissier et al. put these periods between 2009 and 2015 in the US, after 2012 in the euro area and after 1996 in Japan, so the latter two are deemed valid to this day (see *Figures 3/a–c*). (The authors acknowledge that, as a result of the current crisis, the analysis has become relevant again in the US, see *Figure 3/b*). The effective lower interest rate bound is understood as the state where short-term interest rates become flat on a level close to zero, and their standard deviation is at a historically low figure. They

compare the periods characterised by normal and effective interest rate bounds by using IVFs. A two-year interest rate is used as a monetary instrument, considering that the interest rates with a shorter maturity do not fluctuate during periods of interest bounds. Among the monetary policy shocks, Lhuissier et al. analyse the prior announcement and implementation of the quantitative easing measures as the changes in the exogenous monetary policy stance. While in most DSGE model frameworks the effective lower bound prevents the economy from adapting, in their structural VAR model frameworks it is demonstrated that monetary policy remains effective even if the interest rates reach the effective lower bound. The monetary shocks – although to varying extents and for varying periods – cause noticeable movements in the output, in the price levels in this case as well, and the IVFs show similar outcomes in low and normal interest rate environments. This is used to refute the existence of a liquidity trap in the Hicksian sense, if any of the economic actors is faced with any credit limitation, furthermore, they support Friedman and Schwartz's (1963) opinion that lending can be unlimited even in a deep recession. However, the authors emphasise that similar empirical analyses can always be evaluated only if the Lucas critique is also taken into consideration.

Currently, the economists are discussing the macroeconomic effects of the new crisis emerging in 2020 only on the level of possible scenarios. Of the leading central banks, only the Fed and the Bank of England has had some room for manoeuvre to cut the base rate even further therefore the asset purchases continued, and the targeted lending operations became even more prominent, which by now had appeared among the instruments of the Fed, too. The current, New Keynesian model-based theoretical literature raises the most concern about the efficacy of the monetary policy in

Figure 3/a

THE INCREASE OF M0, M1 AND M2 IN JAPAN

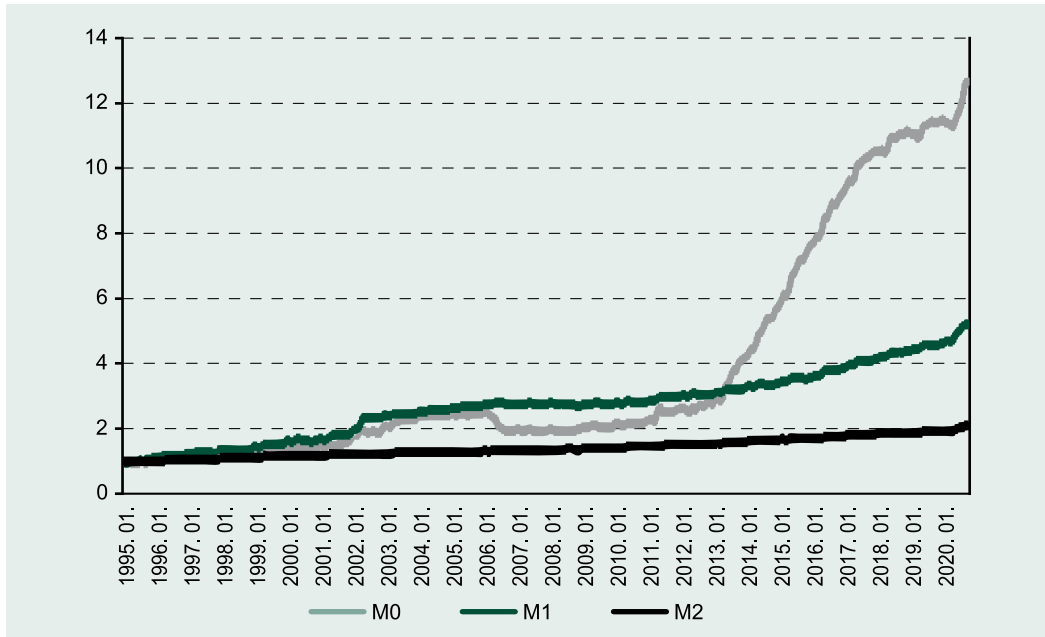
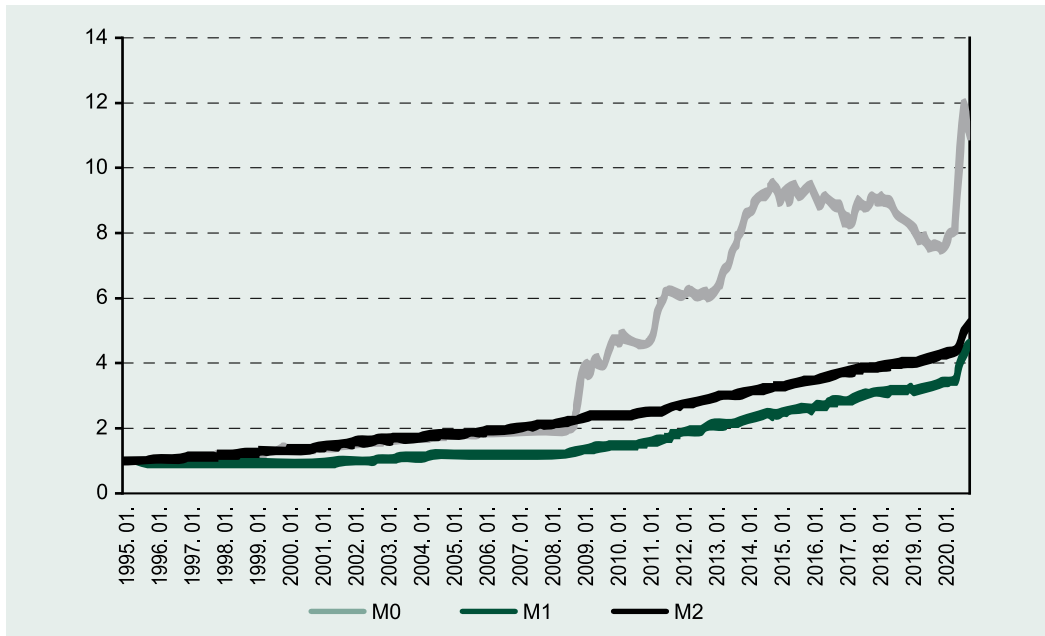
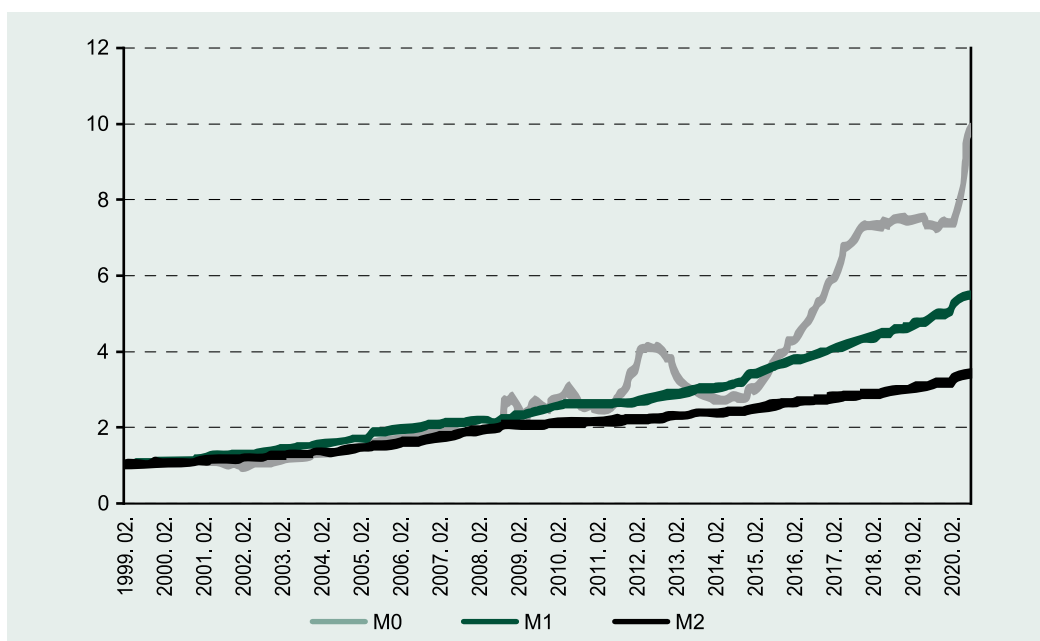


Figure 3/b

THE INCREASE OF M0, M1 AND M2 IN THE UNITED STATES



THE INCREASE OF M0, M1 AND M2 IN THE EURO AREA



Note: Based on monthly data, cumulative growth compared to the starting month, 1 January 1995 = 1 for Japan and the United States, 1 February 1999 = 1 for the euro area, data are available until August 2020. For Japan, M1 and M2 data were estimated using annual / annual growth rates before April 2003; the authors' own calculation.

Source: BoJ, Fed St. Louis, ECB, own edited

the event of positive supply shocks, if the lower interest bound prevails (Kiley, 2016; Lee-Boussard, 2018). It is, however, the negative supply shock phenomenon that is mentioned the most frequently in connection with the coronavirus crisis. However, the supply shock resulting from the restrictive measures taken due to the coronavirus was also followed by a demand shock, which can be attributed to the restricted movement and the strengthening of risk avoidance (Hardi, Szapáry, 2020).

The economic shutdown which took place due to epidemiological restrictions created a completely different situation compared to the previous crises, which had a bearing on the functioning of the economies in recent decades. Currently, the goal is to preserve the capacities and jobs of the economies

which were abruptly shut down. Once the pandemic is overcome, the new investments could have a key role in replacing the lost income and consequently, in the replacement of consumption. Monetary policy should be given a leeway in the further stimulation of investments worldwide, including in Hungary. The importance of this is further reinforced by the fact that the crisis might cause a never-before-seen accumulation of debt.

SUMMARY AND CONCLUSIONS

Keynes described the factors that shape the interest rates and the effects of interest rates on economic processes differently than the economists preceding him. Keynes perceived

the role of money in the economy totally differently than the concepts until then. Keynes introduced the theoretical possibility of a possible lower interest rate bound which could limit the efficacy of the monetary policy. The phenomenon that became known as the liquidity trap has since served as the basis for a number of theoretical explanations. The theories also wanted to reflect on the economic policy problems of the eras concerned. Keynes himself – in course of the development of his General Theory – sought solutions to the problems of the British economy of his time. The works described in our study, and which discuss further elaboration of the topic can be interpreted not only as theoretical ideas but also as practical economic policy recommendations. Therefore, having relied on theoretical explanations, in our study we were also able to present those economic situations where low interest rates were actually applied in monetary policy.

Naturally, similarly to other economic processes, the topic of the liquidity trap cannot be discussed under ‘sterile laboratory’ circumstances. The different economies of different times cannot be compared accurately. However, there is indeed opportunity to recognise the existence of certain trends.

The monetary policy which introduced the low interest rates was not the answer to the stagnation of the Japanese economy that has started in the 1990s. This points to that overcoming the depression requires the simultaneous use of other economic policy instruments. It is also possible that other exogenous factors – such as demographic trends, – require a different approach for the assessment of economic growth.

After the 2008-2009 global financial crisis, most central banks started radical interest rate cuts. After addressing the initial liquidity crisis, the central bank base rates remained

low in order to boost economic growth by making funds cheaper. Near-zero or even negative interest rates persisted permanently. Although the historically extremely low interest rates did not lead to a liquidity trap, keeping interest rates low for short-term maturities did not lead to an unambiguous turnaround in growth. Central banks had to anchor interest rates over longer maturities as well. In addition, instruments had to be used which could also offset the decline in the lending activity of commercial banks and which could lead to an increase in cash in the economy. These instruments were the central bank asset purchase schemes (*quantitative easing*) in general. In addition, the central banks had to support their commitment to their goals, which was achieved with the help of applying forward guidance. The theoretical and empirical literature argues both for and against the use of these unconventional instruments. Some researchers are already talking about the QE trap, where the cost of the quantitative easing outweighs the social benefits thereof, however, the central banks still return to their asset purchase schemes as soon as the interest rate levels are low. Even if extensive empirical analysis is conducted, the assessment of the net real economy impacts of their interest rate policy leads to questionable results, however, the yield-decreasing effects achieved in case of long-term maturities can be verified in the current crisis, similarly to the previous periods.

Based on the study it can be confirmed that central bank can contribute to economic growth keeping interest rates low and therewith fostering investment. In addition to keeping short-term interest rates low, it might be adequate to control interest rates of other maturities and, central banks should express their prolonged commitment to low interest rates, especially in a deflationary environment.

NOTES

- ¹ Robertson's (1940) argument is not identical to the assumption that additional quantity of funds is ineffective with regards to the development of investment, in contracts, his view implies that monetary policy should provide sufficient funds to the economy, thereby preventing the economic output from being halted, which means that it is not the abundance of liquidity but the lack thereof that carries inherent risk. (quoted by Hicks, 1942, 56; Barens, 2018, 2; 8-9).
- ² According to Hicks' (1937) original description: IS-LL curve
- ³ Reference to Patinkin's work titled 'Money, Interest, and Prices: An Integration of Monetary and Value Theory' published in 1956.
- ⁴ A value justified by regression estimates made for a more than thirty-year period and which took into account the effectiveness of monetary policy.
- ⁵ Vickrey (1954), similarly to Brunner and Meltzer, rebutted that monetary policy would be ineffective because of the lower interest rate bound, and he explained his claims with the phenomenon of the so-called programmed inflation phenomenon (Boianovsky, 2004).
- ⁶ According to this theory, the value of assets will decrease relatively of which there is an oversupply in those states of the world whenever the asset concerned makes disproportionately larger payments due to the oversupply.

REFERENCES

- ÁBEL I. (2019). Pénz és kamat: A monetáris politika megújítása [Money and Interest Rate. A New Approach to Monetary Policy] *Prosperitas monográfiák*. [Prosperitas Monographyies] Budapest Business School, Budapest, https://uni-bge.hu/Kutatasi-tevekenyseg/Folyoiratok_kiadvanyok/Prosperitas-folyoirat/Monografia/dokumentumok/Abel_Istvan_Penz_es_Kamat.pdf
- ALTAVILLA, C., GIANNONE, D., LENZA, M. (2014). The Financial and Macroeconomic Effects of OMT Announcements. *ECB Working Paper Series*, No. 1707, <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1707.pdf>
- BARENS, I. (2018). Robertson's 'Liquidity Trap' as an Answer to Keynes's 'Banana Parable, or: did the General Theory Really have to be Written?' 22nd Annual ESHET Conference, 7-9. June 2018., Universidad Complutense de Madrid, Spain, www.eshet-conference.net
- BLANCHARD, O. J. (1997). *Macroeconomics*. Upper Saddle River, N. J.: Prentice Hall
- BOIANOVSKY, M. (2004). The IS-LM Model and the Liquidity Trap Concept: From Hicks to Krugman. *History of Political Economy*, Volume 36, Issue Suppl_1, pp. 92-126, https://doi.org/10.1215/00182702-36-Suppl_1-92
- BRADY, M. E. (2018). Keynes's March 31, 1937 Message to Hicks about the IS-LM Model: 'At One Time I Tried the Equations, as You have Done, With I in all of Them'. <https://ssrn.com/abstract=3152755>
- BRUNNER, K., MELTZER, A. H. (1968). Liquidity Traps for Money, Bank Credit, and Interest Rates. *Journal of Political Economy*, 76, (1), pp. 1-37, <https://doi.org/10.1086/259378>
- BUITER, W. H., PANIGIRTZOGLOU, N. (1999). Liquidity Traps: How to Avoid them and How to

Escape Them. *NBER Working Paper 7245*, <https://www.nber.org/papers/w7245.pdf>

CABALLERO, R. J., FARHI, E. (2018). The Safety Trap. *Review of Economic Studies*, Oxford University Press, Vol. 85(1), pp. 223-274, <https://doi.org/10.1093/restud/rdx013>

CHRISTIANO, L., EICHENBAUM, M., REBELO, S. (2011). When Is the Government Spending Multiplier Large? *Journal of Political Economy*, Vol. 119, No. 1, pp. 78-121, <http://dx.doi.org/10.1086/659312>

COOK, D., DEVEREUX, M. B. (2011). Optimal Fiscal Policy in a World Liquidity Trap. *European Economic Review*, Volume 55, Issue 4, May, pp. 443-462, <https://doi.org/10.1016/j.euroecorev.2010.11.008>

CORREIA, I., FARHI, E., NICOLINI, J. P., TELES, P. (2013). Unconventional Fiscal Policy at the Zero Bound. *American Economic Review*, Vol. 103, No. 4, pp. 1172-1211, <https://doi.org/10.1257/aer.103.4.1172>

DEL NEGRO, M., EGGERTSSON, G., FERRERO, A., KIYOTAKI, N. (2017). The Great Escape? A Quantitative Evaluation of the Fed's Liquidity Facilities. *American Economic Review*, 107 (3). pp. 824-857, <https://doi.org/10.1257/aer.20121660>

EGGERTSSON, G. B. (2008). Great Expectations and the End of the Depression. *American Economic Review*, Vol. 98, No. 4, pp. 1476-1516, <https://doi.org/10.1257/aer.98.4.1476>

EGGERTSSON, G. B. (2011). What Fiscal Policy is Effective at Zero Interest Rates?, In: *NBER Macroeconomics Annual*, Volume 25, NBER Chapters, December, pp. 59-112, <https://www.nber.org/system/files/chapters/c12027/c12027.pdf>

EGGERTSSON, G. B., KRUGMAN, P. (2012). Debt, Deleveraging, and the Liquidity Trap: A Fisher-

Minsky-Koo Approach. *The Quarterly Journal of Economics*, Volume 127, Issue 3, pp. 1469-1513, <https://doi.org/10.1093/qje/qjs023>

EGGERTSSON, G. B., WOODFORD, M. (2003). Optimal Monetary Policy in a Liquidity Trap. *NBER Working Paper*, No. 9968, <https://www.nber.org/papers/w9968>

FISCHER, ST. (2013). Humanitas: Stanley Fischer at the University of Oxford, Lecture

GUBCSI L., TARAFÁS I. (1983). *A láthatatlan pénz [The invisible money] Közgazdasági és Jogi Könyvkiadó [Economic and Legal Publishing House]*, Budapest

HANSEN, A. H. (1953). Útmutató Keyneshez. [*A Guide to Keynes*]. *Közgazdasági és Jogi Könyvkiadó [Economic and Legal Publishing House]*, Budapest, 1965

HARDI ZS., SZAPÁRY Gy. (2020). Koronavírus-járvány és a szekuláris stagnálás [The Coronavirus Epidemic and Secular Stagnation] *Central Bank of Hungary professional articles*, 31st July, <https://www.mnb.hu/kiadvanyok/szakmai-cikkek/tovabbi-szakmai-cikkek>

HICKS, J. R. (1937). Mr. Keynes and the 'Classics': A Suggested Interpretation. *Econometrica*, Vol. 5, No. 2 (Apr.), pp. 147-159

HICKS, J. R. (1939). *Value and Capital*. An Inquiry Into some Fundamental Principles of Economic Theory. Second edition. Oxford: At the Clarendon Press, 1946

HICKS, J. R. (1942). The Monetary Theory of D. H. Robertson. *Economica*, New Series, Vol. 9, No. 33, pp. 53-57

HICKS, J. R. (1974). *A keynesi gazdaságtan válsága. [The Crisis in Keynesian Economics.]* In: *Érték és tőke – A keynesi gazdaságtan válsága [Value and Capital*

- *The Crisis in Keynesian Economics*] *Közgazdasági és Jogi Könyvtudományi [Economic and Legal Publishing House]*, Budapest, 1978
- IRELAND, P. N. (2005). The Liquidity Trap, the Real Balance Effect, and the Friedman Rule. *FRB Boston Working Paper*, No. 05-3, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=760266
- ITO, T. (1999). Japan and the Asian Financial Crisis: The Role of Financial Supervision in Restoring Growth. The International Centre for the Study of East Asian Development, Kitakyushu, *Working Paper Series*
- ITOH, M., Shimoi, N. (2000). On the Role of Monetary Policy in a Deflationary Economy: The Case of Japan. *Journal of the Japanese and International Economies*, Volume 14, Issue 4, pp. 238-260, <https://doi.org/10.1006/jjie.2000.0457>
- KEYNES, J. M. (1936). *The General Theory of Employment, Interest and Money*. Palgrave Macmillan
- KILEY, M. T. (2016). Policy Paradoxes in the New Keynesian Model. *Review of Economic Dynamics*, Vol. 21, pp. 1-15, <https://doi.org/10.1016/j.red.2016.03.002>
- KORINEK, A., SIMSEK, A. (2014). Liquidity Trap and Excessive Leverage. *IMF Working Paper*, WP/14/129, <https://www.imf.org/external/pubs/ft/wp/2014/wp14129.pdf>
- KRUGMAN, P. R. (1998). It's Baaack: Japan's Slump and the Return of the Liquidity Trap. *Brookings Papers on Economic Activity*, Economic Studies Program, The Brookings Institution, Vol. 29(2), pp. 137-206
- KRUGMAN, P. R. (1999). Thinking about the Liquidity Trap. December, <http://web.mit.edu/Krugman/www/trioshrt.html>
- KUMAR, M. S., BAIG, T., DECRESSIN, J., FAULKNER-MACDONAGH, CH., FEYZIOĞLU, T. (2003). Deflation. Determinants, Risks and Policy Options. IV Risks of Deflation. *IMF Occasional Paper*, 221, https://www.elibrary.imf.org/doc/IMF084/01591-9781589062276/01591-9781589062276/Other_formats/Source_PDF/01591-9781451932515.pdf
- LEE, R. S. H., BOUSSARD, J. (2018). How Different are Supply Shocks under the Zero Lower Bound and Normal Times? Empirical Investigation of the New-Keynesian Model and Paradoxes. 15th Euroframe Conference on Economic Policy Issues in the European Union, https://www.euroframe.org/files/user_upload/euroframe/docs/2018/Conference/Session%204/EUROF18_Lee_Boussard.pdf
- LEIJONHUFVUD, A. (1984). Hicks on Time and Money. *Diskussionsbeiträge – Serie A*, Nr. 182, Universität Konstanz, Fakultät für Wirtschaftswissenschaften und Statistik, Konstanz
- LEIJONHUFVUD, A. (1987). Rational Expectations and Monetary Institutions, in de Cecco, M., Fitoussi, J. P. (eds). *Monetary Theory and Economic Institutions*. pp. 21-43
- LHUISSIER, S., MOJON, B., RUBIO-RAMÍREZ, R. (2020). Does the Liquidity Trap Exist? *BIS Working Papers* No. 855, <https://www.bis.org/publ/work855.htm>
- LV, L., LIU, Z. (2020). Low Rates, Zero Lower Bound and Monetary Policy Black Hole. *Applied Economics Letters*, DOI: 10.1080/13504851.2020.1803475
- MCKINNON, R., KENICHI, O. (1999). The Foreign Exchange Origins of Japan's Economic Slump in the 1990s: The Interest Rate Trap, Mimeo, Bank of England, March, <https://doi.org/10.1111/1467-9701.00357>
- MELTZER, A. H. (1999). Commentary: Monetary Policy at Zero Inflation. *Proceedings – Economic*

Policy Symposium – Jackson Hole, Federal Reserve Bank of Kansas City, pp. 261-276.

MELTZER, A. H. (2015). The QE Trap. *Intereconomics*, Vol. 50(3), pp. 171-172, <https://www.intereconomics.eu/contents/year/2015/number/3/article/the-qe-trap.html>

MERTENS, K., RAVN, M. O. (2010). Fiscal Policy in an Expectations Driven Liquidity Trap. ECB Conference, https://www.ecb.europa.eu/events/pdf/conferences/ecb_mopo_fipo/paper2.pdf

PATINKIN, D. (1974). The Role of the ‘Liquidity Trap’ in Keynesian Economics. *PSL Quarterly Review*, Vol 26, No. 108, pp. 4-11

PESUTH T. (2016). Redefining the Role of Central Banks. *Public Finance Quarterly*, Vol. 61(1), pp. 34-48

ROBERTSON, D. H. (1940). *Essays in Monetary Theory*. London, Staples Press

RUBIN, G. (2008). *Patinkin’s Interpretation of Keynesian Economics: A Genetic Approach*. In: Leeson R. (eds) *The Keynesian Tradition. Archival Insights into the Evolution of Economics*. Palgrave Macmillan, London, https://doi.org/10.1057/9780230582026_5

SVENSSON, L. (2001). The Zero-Bound in an Open Economy: a Fool-Proof Way of Escaping the Liquidity Trap. *Monetary and Economic Studies*, 19, pp. 277-321, <https://larseosvensson.se/files/papers/me19-s1-11.pdf>

SZEPESI GY. (1984). *Bevezető [Introduction]* In: *Pénn és gazdasági növekedés [Money and Economic Growth]* (edited by György Szepesi). *Közgazdasági és Jogi Könyvkiadó [Economic and Legal Publishing House]*, Budapest

TOBIN, J. (1971). Likviditási preferencia és pénzpolitika [*Liquidity Preference and Monetary Policy*] In: *Pénn és gazdasági növekedés [Money and Economic Growth]* (edited by György Szepesi). *Közgazdasági és Jogi Könyvkiadó [Economic and Legal Publishing House]*, Budapest, 1984

TOBIN, J. (1981). *A monetarista ellenforradalom ma. [The Monetarist Counter-Revolution Today]* In: *Pénn és gazdasági növekedés [Money and Economic Growth]* (edited by György Szepesi). *Közgazdasági és Jogi Könyvkiadó [Economic and Legal Publishing House]*, Budapest, 1984

UEDA, K. (2001). Japan’s Liquidity Trap and Monetary Policy, Speech Given at the Semi-Annual Meeting of the Japan Society of Monetary Economics held at Fukushima University in Fukushima City, on September 29, https://www.boj.or.jp/en/announcements/press/koen_2001/ko0112a.htm/

WALSH, C. E. (2003). *Monetary Theory and Policy*. MIT Press Books, The MIT Press, edition 2, Vol. 1, number 0262232316, December

WERNER, R. A. (2005). *New Paradigm in Macroeconomics. Solving the Riddle of Japanese Macroeconomic Performance*. New York: Palgrave Macmillan

WERNING, I. (2012). *Managing a Liquidity Trap: Monetary and Fiscal Policy*. MIT, <http://economics.mit.edu/files/7558>

WHELAN, K. (2020). The Zero Lower Bound and the Liquidity Trap. University College Dublin, Advanced Macroeconomics Notes. <https://www.karlwhelan.com/Macro2/Notes4.pdf>