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**Soft Monetary Constraint and Shortage
in the European Sovereign Debt Economy**
Insights from J. Kornai's theory¹

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Summary: From the fourth quarter of 2007 to the second quarter of 2020, the monetary base in the euro area grew by 330%, the money supply by 61% and inflation measured by the consumer price index - only 17%. Interest rates are around zero and negative, inflation is low, and we often register deflation. This discrepancy between the growth of money and prices has not only practical dimensions for the ECB and FED monetary policy, but also a theoretical significance. In this contribution, we propose an interpretation of these trends on the basis of concepts developed by J. Kornai in his economics of shortage analysis, from which we derive our insights on the sovereign debt market situation in European countries. J. Kornai is an unclassifiable economist whose work reflects to some extent the influence of the Austrian School of economics. The point here is not to transpose Kornai's shortage economy analysis to European capitalist economies, but to show that similar phenomena are appearing today in a different institutional context.

Key words: J. Kornai, Soft Budget Constraint, Soft Monetary Constraint, European Sovereign Debt, Shortage of Safety Assets, Repressed Inflation

JEL codes: E5, E6, P21, P50

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Abbreviations

ANFA – Agreement on Net Financial Assets
APP - Asset Purchase Programme
CPI – Consumer Price Index
ECB – European Central bank
ELA – Emergency Liquidity Assistance
ESCF – Eurosystem of Collateral Framework
LTRO - Long Term Refinancing Operations
NCB – National Central Bank
OMT - Outright Monetary Transactions
PEPP - Pandemic Emergency Purchase Programme
PELTRO - Pandemic Emergency Long Term Refinancing Operations
PSPP - Public Sector Purchase Programme
QE – Quantitative Easing
SBC – Soft Budget Constraints
SMC – Soft Monetary Constraints
SMP - Securities Markets Programme
TARGET - Trans-European Automated Real-time Gross Settlement Express Transfer System.
TIE – Theory of Issuance Economy
TLTRO - Targeted Long Term Refinancing Operations

I Introduction

For almost 13 years, from the fourth quarter of 2007 to the second quarter of 2020, the monetary base in the euro area increased by 330%, the money supply by 61%, and inflation as measured by the consumer price index – by merely 17%. A similar trend is observed in the USA². The gap between money growth and CPI inflation has not only practical dimensions for the ECB's monetary policy but also presents a theoretical challenge.

In this article we consider a possible theoretical interpretation on the current state and dynamics of the monetary policy and the debt market in Europe, which could explain the disconnection between monetary aggregates and CPI inflation. We limit ourselves to the time span from the beginning of the crisis in Europe in late 2007 to mid-2021, i.e. until the anniversary of the pandemic outbreak³. Today, the state of the debt market in the euro area (and in the EU), as well as of the ECB's monetary policy can be determined by the following stylised facts.⁴

First, an avalanche of virtually uncontrolled increases in public debt in the euro area and in the EU, far above the sustainability standards regulated and derived from practice. The Eurosystem plans monthly debt purchases for the coming years, both in total volumes and by

² See Bussière and al. (2020). Over the same period, the US monetary base increased by 498%, money supply by 144% and inflation by 19%.

³ The long-term path dependence is extremely important, but is beyond the scope of this paper.

⁴ Figures and references will be specified in the next sections.

country, in the latter case by deviating from the participation of individual countries in the ECB's capital. Monetary policy acquires the functions of fiscal policy and its behaviour fully fits into the postulates of today's popular MMT (Modern Monetary Theory).

Second, large-scale QE, i.e. different LTRO and centralised and decentralised repurchase of public and corporate debts through different programmes respectively by the ECB and Eurosystem NCBs (e.g. local ELA credit and ANFA agreement). This is combined with an extremely relaxed collateral policy.

Third, zero and negative ECB interest rates, "pushing" sovereign bond prices upwards and, accordingly, repressing yield curves in the direction of negative values. The whole set of interest rates on loans and deposits, etc., follows this dynamic and also enters zero and negative territories. Thus, there is no feedback and adjustment for debt issuers.

Fourth, the interbank money market practically dying away and being replaced by the ECB's balance sheet. The interbank money market ceases to provide correct information and signals about the individual liquidity situations. This leads to non-market processes known as 'financial repression', i.e. when, through administrative measures, financial resources are diverted from the private sector and channelled to the public sector.

Fifth, an increase in the banks' excess reserves and deposit facilities (now trillions of euros) with ECB and this despite the losses, which banks suffer from these transactions. A strong increase in the cash in circulation and the hoarding of banknotes by economic agents.

Sixth, in macroeconomic terms, a rapid extension of the Eurosystem's balance sheet (and monetary base), accompanied by a frozen money supply and a sharp decrease in the money multiplier and the velocity of money.

Seventh, all that has been said so far is accompanied by a threatening widening of the gap between the TARGET balances ('the net positions of the NCBs within the Eurosystem'). Of particular importance is Germany's larger than trillion-euro positive balance, mirroring the sum of Italy's and Spain's debit balances.

And as a counterpoint to the overall dynamics – eighth, extremely low levels of CPI inflation, often running zero and negative values. This is accompanied by the assertions of a number of economists about the existence of a long-term disconnection of inflation from the dynamics of monetary aggregates. At the same time, there is financial inflation, i.e. on the financial market, as well as in real estate, etc.

These phenomena, a manifestation of deep structural disproportions within individual countries and the euro area as a whole, are the subject of heated practical and theoretical debates⁵. Without denying the usefulness and qualities of the theoretical interpretations proposed so far, we offer a new insight into what is happening, drawing ideas from the functioning of a seemingly radically different economic system – that of the planned socialist economy. In fact, the socialist economy and its monetary mechanisms, which were in force in

⁵ A survey of the literature is not necessary here. Instead, see Sinn's main texts (2014, 2020).

the socialist bloc (for 45 years in most countries, and in the USSR for over 70 years), were the subject of numerous theoretical analyses in the past, some of which are now forgotten. The most comprehensive theoretical model is undoubtedly the one developed by the leading Hungarian economist János Kornai in his book, *The economics of shortage* (1980), which gives a central place to the concept of soft budget constraint and its consequences to explain the normal state of shortage in a socialist economy. The influence of the Austrian school of economics on János Kornai's thought, especially Hayek's, is now widely acknowledged (Leeson 2008, Boettke 2021, Vahabi 2021).

In our opinion, the theory developed by János Kornai, after some adaptation, has a good explanatory power about modern monetary policy processes, debt markets and inflation in Europe. The point here is not to transpose Kornai's shortage economy analysis to European capitalist economies, but more modestly to draw inspiration from it to understand another reality. Our intention is therefore not to apply Kornai's concepts in the stricter sense but to show that similar phenomena are observed today in an institutional context that is in principle very different.⁶ Yet, according to Kornai, it is the institutional framework (specifically state paternalism) that is at the root of the soft budget constraint and of the regulation mechanisms related to excess demand and chronic shortages that it generates. This raises questions about the specific institutional arrangements that define the monetary and financial system of the euro zone.

Our study is organised in two parts. In the first part we review the basics of János Kornai's model in analysing the functioning of the socialist economy, with an emphasis on the monetary dimension of the shortage economy. In the second part we propose an adaptation of the model to modern European economies, where financial and in particular sovereign debt markets are at the forefront. Instead of soft budget constraints (SBC), typical of socialism, we introduce the concept of soft monetary constraints (SMC). Finally, we provide a synthesis of the parallels between both systems from the perspective of the model of repressed inflation and deficit. In conclusion, we discuss the limits of the proposed interpretation, as well as some interesting directions for future research.

II János Kornai, SBC and the political economy of socialist shortage economy

The main observable manifestation of the structural imbalances of planned economies of the type of "real socialism" ("actually existing socialism") was the chronic shortage in the market for goods and services for the population.⁷ This deficit became increasingly acute over the years leading to discontent and social tension. At the same time, prices in the consumer market were controlled and kept low for ideological reasons.

⁶ Kornai (1986, p. 21) himself considered that his analytical framework (SBC) could be applied to "mixed" capitalist economies and, later on, to post-socialist economies in transition. Finally, he further extended the scope of the SBC by suggesting that "the SBC syndrome arises in all vertical relationships in which the superior organization provides monetary support to the subordinate one." (Kornai, 1998, p.13)

⁷ In socialist economies, the coordination of production was carried out through the Planning Authority. The planning authority is a general concept that includes several institutions – the State Planning Commission, the People's Bank (Monobank), the Prices Committee, to name a few (about the difficulties of coordination between these institutions, see Ellman 1979).

As mentioned, in its most comprehensive form, the dynamics of the socialist system was analysed by János Kornai, an unclassifiable economist who is claimed by the many theoretical schools from which he may have drawn inspiration (Marxist, neoclassical, Keynesian, Austrian, institutionalist, evolutionary, etc.) but whose theoretical achievement remains both unique and remarkable. His singularity rests primarily on his scientific method, the system paradigm, which allows him to have a different understanding of economic reality (Kornai 1999, 2016, Lindbeck 2007, Ellman 2021, Vahabi 2021).

The point here is not to present in details Kornai's economics of shortage, which is well known enough, but to focus on the monetary aspects of the model. In Kornai's theory, the concept of soft budget constraint is of central importance (Vahabi 2001, Boettke 2021).⁸ Yet, according to the author, the SBC is rooted in the institutional foundations of the socialist system, the paternalist relationship between the state and the enterprises, especially since the latter are all state-owned. As Kornai explains, the concept of the SBC “refers to the phenomenon that socialist firms are bailed out persistently by state agencies when revenues do not cover costs” (Kornai 1998, p.12). The softening of the constraint occurs mainly on the credit side and/or on the tax side.⁹ The SBC generates an almost insatiable demand for commodities and labour, for investment resources (“investment hunger”) and for consumer goods and services. Over time, the various actors have learned to adapt to this situation of chronic shortage. Their regular, repeated behaviours lead to the formation of a variety of regulation mechanisms based mainly on quantity and only partly on price, over different time horizons (instantaneous, short term, long term) and at different levels (micro, macro), such as the reduction of production, forced substitution, forced change in the composition of output, queuing, self-restraint, plan revision, repressed inflation, forced savings, etc., which contribute to reproduce this “normal state of shortage” (Kornai 1980).

In the monetary sphere, Kornai adopts the active/passive money distinction found in Brus (1968, 1986), which he associates with the hardness/softness of the budget constraint. This distinction reflects the existence of the dual cash flow cycles, which can be presented in the following way, by departing slightly from Kornai's approach in order to make a connection with other analyses of the planned economy.

Within the first – non-cash (dematerialised) cycle, all enterprises, organisations and establishments (“of the whole people” by their nature) have accounts with the Monobank¹⁰. Payments between them are dematerialised, in the form of compensation and clearing. This is done as part of the Monobank’s “credit and monetary plan”.

The second cycle is the cash cycle. Cash serves households and facilitates consumer transactions. In terms of volume, this cycle is significantly smaller than the non-cash one, that of enterprises and public organisations. The consumer sector preserves, albeit within certain

⁸ A few years later, he would admit that a soft budget constraint is a necessary but not sufficient condition for the development of a shortage economy (Ellman 2021).

⁹ More precisely, Kornai (1980, p.306-307) identifies five conditions under which a budget constraint can be considered as soft : price-making, soft tax system, fee state grants, soft credit system, external financial investment at soft conditions. He points out that a single condition is sufficient to render the constraint soft.

¹⁰ Stalin adopted some of Serguei Strumilin's ideas making them the basis of his new economic course of action. It was launched by the financial and monetary reform in 1930/31, when a shift was made to the Monobank model.

limits, market relations ("commodity money relations"), as apart from the population, co-operative and other individual economic actors also participate. Households have access to certain consumer goods and services (reaching at maximum the purchase of a car and a home that is actually rationed), these goods being paid for with cash. Households also pay taxes. Cash reaches the population through the salaries received under the first planned and "of the whole people" sector, forming the "balance of income and expenses of the population", controlled by the Monobank. As Kornai points out, "in a socialist economy, the household's budget constraint is hard" (Kornai 1980, p.43) and bounded by its salary. "Accordingly, within the household sector, money is completely active." (idem, p.514) Households are therefore sensitive to consumer goods prices and to income variations and make consumption and savings choices.

Prices in the consumer market are fixed and generally understated, i.e., they are below their equilibrium level. Stable, low and even falling prices, as well as low unemployment, are considered the conquest of real socialism (Kornai 1980, p.372), epitomising the growth of real wages and the productivity of socialist labour. Financial assets and financial markets do not exist – they are considered "capitalist phenomena". The government does not resort (or very rarely resorts) to issuing domestic debt, because in reality it has direct access to the issue of money (the Monobank and the Government represent the same body). In other words, just like in the postulates of MMT, the issue of money is equivalent to the issue of domestic debt¹¹.

The relationship between the two cash cycles is actively planned by controlling the outflows from the non-cash to the cash sector in the form of salaries, as well as the reverse flow, from the cash to the non-cash sector, in the form of payments of goods and taxes and fees. The cash volume is controlled by the Monobank through the "cash plan", where it results in the issue of cash. The issue of cash is a net result (balance)¹² of the implementation of the plan of "cash income and expenses of the population", as well as cash transactions in the cooperative sector and payments with abroad, etc.¹³

The Monobank, through its numerous branches, monitors the cash outflows mainly as wages to the enterprises attached to those branches on a territorial basis. The Monobank branches are required to control the cost of wages following the plan, which according to the plan should not outpace labour productivity. In fact, the Central Management of the Monobank constantly encounters problems with the decentralised control, and wages are steadily increasing ("wage-drift")¹⁴. As a whole, money in socialism is "*passive*", it has mainly accounting and control functions. Passive money officially allows the plan to be controlled by money through bookkeeping entries at the state bank. This process is known as "control by roubles" (respectively leva, zloty, forints, etc.). According to Kornai, money is passive where the budget constraint is soft. Money does not really influence firms' decisions, as they can easily obtain additional credit. According to Kornai, the increasing demand for money is met

¹¹ Wray (2015) and Kelton (2020). See also Nenovsky (2020).

¹² Where the receipts are more than the cash plan payments, the issue result indicates withdrawal of money from circulation, and vice versa, where the receipts are less than the cash plan payments, the net result is the release of an additional amount of cash (Kotsev 1989, pp. 45-6).

¹³ The following references are about familiar principles from the socialist textbooks on money and finance: see Atlas (1969), Velyov (1952), Kotsev (1989), Kotsev and Nikolova (1983). A comprehensible setting out of the principles of cash flows in socialism was made in Garvy's book (1977).

¹⁴ See Brus (1986 [1981]) and Nakamura (2017).

without resistance by the growing supply of money. « The supply of money adjusts passively to money demand in the sector comprising firms and non-profit institutions. » (Kornai 1980, p.515). The SBC at the microeconomic level is actually coupled with a soft monetary constraint (SMC) at the macroeconomic level. Kornai does not mention this SMC concept but his analysis suggests it to us and we mobilize it in the second part of the paper to understand the debt market situation in the Eurozone.¹⁵

If we add to the SBC syndrome, the socialist "law of enlarged reproduction through the outpacing development of capital goods sector vis-a-vis the consumer goods sector", the emergence of an imbalance between the investment and consumer sectors becomes clear. It inevitably leads to the conversion of part of the non-cash cycle into cash cycle (through wages), and consequently to increasing the cash supply faster than the volumes on the consumer market. Of particular relevance is the wage-drift, outlined by Kornai (Kornai 1980, section 16.5, p.400), which further leads to an increase in the money supply above the norms set by the plan (see also Brus's analysis, 1986 [1981], p.59, p.93). The outflow of purchasing power from the non-cash sector (enterprises and establishments) to the cash sector is referred to by Kornai as the '*siphoning effect*', and there have been attempts in the economic literature to measure this effect empirically (Kim 2002).¹⁶ Hence, the official separation of both money cycles is rarely observed and the control of plan by money is rarely respected.

The end result of this dynamics is the presence of a "monetary overhang" and "repressed inflation", which may be the counterpart of a chronic structural deficit in the consumer market¹⁷. A distinction needs to be made here between repressed inflation as an observed empirical phenomenon (excess demand and liquidity with a stable price level) and as a theoretical model identified within the framework of disequilibrium economics (Malinvaud 1977, 1991, Benassy 1982, Barro and Grossman 1971). In this model prices are fixed and there is excess demand on both the goods and labour markets¹⁸, as opposed to Keynesian

¹⁵ The problem of the micro/macro distinction related to the concept of SBC has been raised by Vahabi (2014). Kornai considers SBC as a microeconomic concept (firm behaviour) but its roots are macroeconomic (state paternalism and redistributive policies). Vahabi offers a historical explanation to resolve this apparent contradiction by focusing on the changing macroeconomic context in Hungary through time, especially the rise of external debt.

¹⁶ As Kim (2002, p.111) points out : « Some economists who have examined the development of the Soviet financial control in its historic context tend to agree with Kornai. Grossman and Birman argue that the Soviet enterprises had too much money and could spend it on purchasing consumer goods. »

¹⁷ In this article we limit ourselves to the deficit in the consumer market, where liquidity overhang is realised. In fact, the "deficit" is a systemic and generic category for the socialist planned economy, with deep roots in the investment sector in a SBC context; it is also characteristic of the distribution of the workforce, etc. (see Kornai 1980, Chavance 1986). J. Kornai offers a methodology for measuring the consumer deficit. As for the roots of inflation and "money supply overhang" in the planned and transformation economies, see in particular Commander and Coricelli (1991).

¹⁸ The repressed inflation model has a long history. Actually, in Russia, since the collapse of the NEP (in 1927) and until 1991, as in other COMECON states, the "model of repressed inflation" was applied in a situation of almost completely state-owned economy. In the years of war communism, the "Theory of Issuance Economy" (TIE) was extremely popular, most clearly expounded by S. Falkner (1924) (see Nenovsky 2020). TIE remained the theoretical construct of socialist political economy. Later, in the 1970s, a debate began in Western literature on the "theory of repressed inflation" in socialism. This theory, in fact, is no other but TIE, rediscovered and launched under a different name. Indeed, after the publications of soviet economist S. Falkner, in 1926, based on the quantitative theory (Marx is a follower of Ricardo), S. Strumilin hypothesised that under a regime of controlled prices in the case of over-issuance of non-backed paper money, the equilibrium within the

unemployment, in which both markets are in excess supply, and classical unemployment with excess demand on the market for goods and excess supply on the labour market. Although Kornai borrows the terminology of disequilibrium theory (seller's market, buyer's market, shorter side rule, excess demand, excess supply, etc.), he disagrees with its claim that socialist economies correspond to the repressed inflation regime mainly because their institutional characteristics are different.¹⁹ "Their train of thought goes off the rails when they regard this capitalist system of fixed prices, with excessive Keynesian injections as being identical with a socialist economy for the latter has different institutional conditions and its behavioral regularities are therefore different, too" (Kornai 1980, p.558). Thus, repressed inflation may be a manifestation of chronic shortage, but it is by no means an explanation (disequilibrium theory model).²⁰ "Shortage may be associated with repressed inflation but need not be so." (Kornai 1980, p.556) The causes of shortages are to be found in the SBC and state paternalism.

Agents adjust to chronic shortages and, some of its manifestations, characteristic of socialist economies, act as regulation mechanisms that lead to the reproduction of the normal state of shortage. Among these, we can mention the following non-exhaustive list: (i) queues in shops, (ii) poor quality goods, accumulated unsold stocks of poor quality, outdated and with defects (iii) forced substitution of goods with bad goods, forced joint sale of desirable and unwanted goods²¹, (iv) resort to black market, (v) artificial employment and hidden unemployment (vi) significant forced households' savings, etc.

Forced savings appear in the form of deposits in the state savings bank, or in the form of cash, i.e. in banknotes. Forced savings are the result of having nothing to buy, i.e. the existence of a solvent demand without adequate supply ("sellers' market"). Savings can be seen as a form of monetary sterilisation, of "consumer repression." These processes lead to a slowdown in the velocity of cash reflected in the official statistics of socialist countries, as well as in other empirical studies (Birman 1980, 1980a)²². Still, according to Kornai, forced saving appears to be the final step in the consumer shopping process, which may end earlier with forced spending or forced substitution (Kornai 1980, section 18.4, p.451).

Moreover, the system of consumer deficit and repressed inflation leads to the favouring of communist elites. According to the prominent socialist economy specialist D. M. Nuti:

quantitative equation is reached not by increasing the price level, but by reducing the velocity of money. It is through the rate of reduction of the velocity of money that the "potential" inflation in the system can be inferred. On the other hand, B. Novozhilov (1924, 1926) theoretically deduces the shortage of goods as a function of the excess issue of money. For a comprehensive discussion on monetary processes in Soviet Russia see Arnold (1937), Davies (1958), Bogomazov (1974), Garvy (1977), Yurovsky (2008), Magnin and Nenovsky (2021).

¹⁹ See also "section 18.10. A critique of the Clower-Barro-Grossman school" (Kornai 1980, p.476) and Andreff's comments (Andreff 2021).

²⁰ In Kornai's institutional and systems approach, an increase in prices within the system would not be sufficient to eliminate chronic shortages in the consumer goods market because regulation mechanisms would return the system to its normal state of shortage (Ellman 2021). This point was a subject of controversy between Kornai and Gomulka (Gomulka 1985, Kornai 1985).

²¹ It was a common practice in the years of deficit in the USSR to sell highly sought-after goods together with aged goods ("with a load") (Russian "с нагрузкой"). For example, a bottle of vodka is sold together with shoes (even if they do not fit the size needed by the buyer).

²² Between 1955 and 1979, money velocity was divided by 4 to 5 in Hungary, Poland, Czechoslovakia and GDR (Nuti 1986). For more information see Willes (1962), Seurot (1983), Nuti (1986), Dembinski (1988) and Kim (2002).

“The persistence of excess demand, indeed the elevation of shortage to a systemic feature, leads to a *prima facie* case for suspecting that it is maintained primarily because it conceals the privileges of the elite through exclusive access to luxuries and necessities at abnormally low prices, while market-clearing prices would reveal and quantify privilege, as its maintenance would require drastically more unequal incomes and wealth”. (Nuti 1986, p.76)

To maintain the balance of the system and not reach social tensions (due to shortages) and avoid open inflation, in addition to several attempts at structural reforms (aimed at enterprises autonomy and greater arbitrariness), one-off monetary measures were most often resorted to²³. These consisted of one-off price rises, squeeze on cash supply (deflation) or monetary reform (redenomination). By redenomination (changing the value of the currency), the accumulated sums of money were devalued²⁴.

All these palliative measures ended in 1989, when the planning system exhausted its potential for partial equilibriums. Potential and hidden inflation became open and the socialist planning system collapsed. The countries of Central and Eastern Europe entered the transformation period (often, and incorrectly, called "transition")²⁵.

As an interim summary, we will note that the SBC and the disproportions within the socialist economy contributed to an out-of-control increase in the cash in circulation. In the face of consumer price repression (repressed and hidden inflation), the money supply overhang accompanied the shortage of consumer goods and services. This inefficient system collapsed. And we turn to European economy, where public debt issues are a key focus and money supply and reserve money grow without a corresponding increase in prices in the consumer market.

III János Kornai, SMC and the political economy of the Eurozone debt economy

To begin with, it should be observed that the Eurosystem's monetary policy can be clearly distinguished by two major patterns, up to and after the 2008 crisis. In the first period, this policy was generally conservative and responded to the apparently successful development of the euro area. With the onset of the crisis, the result of accumulated disequilibria very quickly and radically steered monetary policy to the other extreme, of monetary laxity and large-scale liquidity injections.

The expansionary evolution of monetary policy can be summarised as follows (see for more details Rostagno and al. 2019, ECB 2021).

In 2010 SMP was launched and turned into OTM in 2012 and then, in mid-2014 the real QE started. This became the APP programme, made up of four sub-programmes to buy securities,

²³ An overview of reforms in socialist countries was made in the books of W. Brus (1986 [1981]) and B. Chavance (2020 [1994]).

²⁴ For example, the Soviet reform in 1947, the monetary reforms in Bulgaria in 1947, 1952, 1962, etc. See, for example, Chudnov (2018) and Tsarevsky (1975, pp. 45-6), Velyov (1952).

²⁵ The literature is quite extensive. See, for example, Commander, ed. (1991), Balcerowicz (1995, 2002), Aslund (2001) and Magnin (1999).

the main one being the purchase of public debt (PSPP) and accounting for about 80% of the total. As of September 2021, the total volume of books bought on the APP line is just over €3.2 trillion. In the course of 2020, a new PEPP programme with a total volume of EUR 1,850 billion was added as a response to the pandemic. It should be noted that the PSPP and the PEPP show a divergence between the cumulative net purchases of public debt of individual countries and their participation in the ECB capital ²⁶.

In parallel with the purchase of debt, the injection of liquidity by banks increased. As early as 2008, there was a shift to OMO under full allotment, and from 2012, a three-year LTRO programme was launched. In 2014, 2016 and 2019, LTRO evolved into three new programmes TLTRO I, TLTRO II and TLTRO III, which were linked to banks' lending, and with a maturity of 3, 4 and 3 years respectively. TLTRO III was implemented at a negative interest rate below the DFR (which is -0.5%). TLTRO programs represent about 1/3 of all assets (Schnabel, 2021). In the 2021 pandemic, a special PELTRO program was launched at 25 basis points below the Eurosystem base rate (which is 0%). Finally, collateral requirements have been relaxed several times, expanding eligible assets, reducing haircuts, etc. (last change in April 2020). All these measures have created a lot of liquidity, increasing the monetary base and the Eurosystem's balance sheet.

Considering all the complexity of modern European economy, it can be assumed, within a working hypothesis, that some of the phenomena currently observed in the financial market and, above all, in the sovereign debt market, bear similarities to those of the shortage economy presented above. Whereas in socialism, imbalances manifest themselves and are managed administratively and directly in the consumer market, here this is mediated through the sovereign debt market. The debt market, the banking sector and monetary policy play a key role as an intermediate mechanism, which is known in practice and literature as a process of "financial repression". ²⁷ The Eurosystem functions as a Lender of First Resort for governments and banks and introduced systemic macroeconomic "soft monetary constraints" SMC (derived from Kornai's SBC). The causal links of financial repression, deficit and repressed CPI inflation through the debt market can be presented as follows.

Structural disproportions in the euro area countries, as well as structural disproportions among them (complemented by the absence of a common budget, etc.), as well as the desire to preserve the equilibrium on the consumer market and low unemployment, are absorbed by the massive increase in public debt (Fig. 1) and subsequently through the banking system end up on the Eurosystem balance sheet (Fig. 2). As a general result, the balance sheet of the Eurosystem is growing strongly (Fig. 3). The fundamental objectives of keeping inflation and unemployment low were also considered to be crucial in the socialist system.

²⁶ The ECB believes that a "flexible" PEPP is an appropriate solution for managing a heterogeneous euro area (Schabel, 2021).

²⁷ Known by the works of R. MacKinnon and E. Shaw, see Fry (1995 ([1988]), Reinhard et al. (2011), Reinhard (2012) and Hoffman (2017). The concept of financial repression is close to the approach of the economic cycle developed by the Austrian school (see Hayek 2012 [1929]).

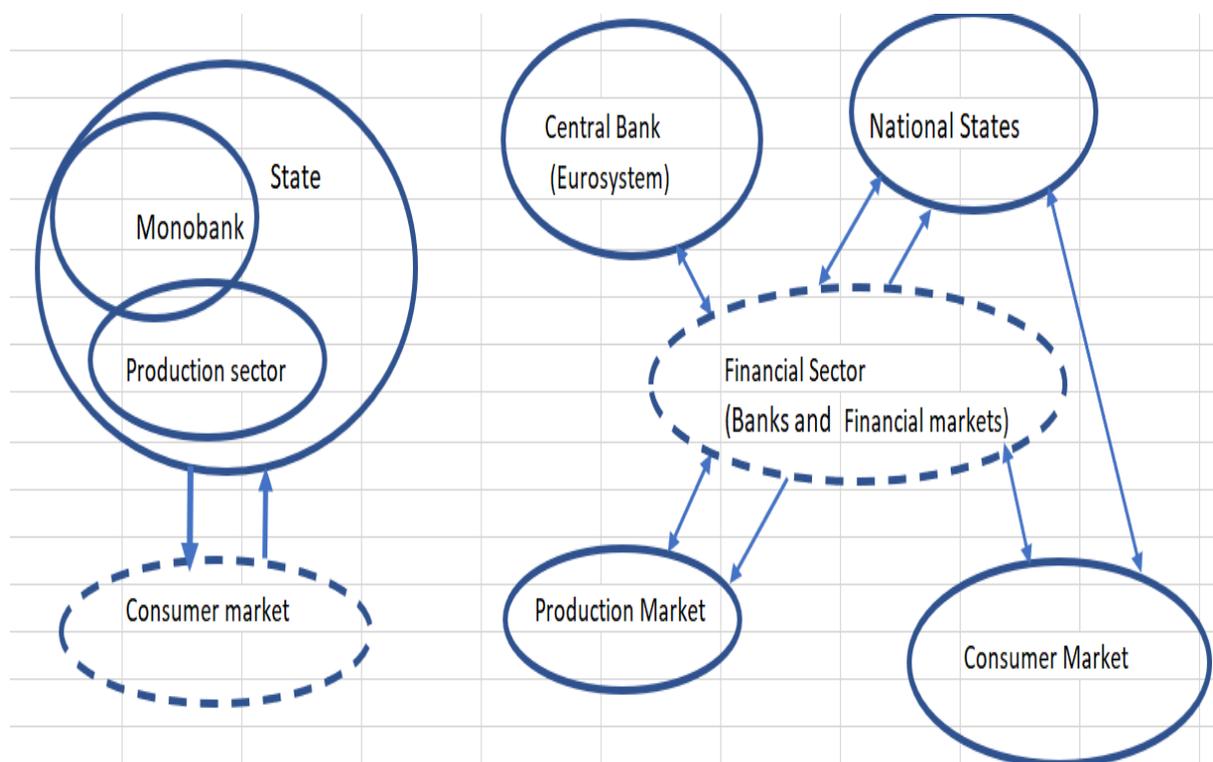
Figure 1 here : Public debt dynamics in the euro zone

Figure 2 here : Public debts repurchased by the Eurosystem

Figure 3 here : Eurosystem's balance sheet

Unlike socialism, where no differentiated banking and financial sectors exist (debt market including) and the government has direct and automatic access to the currency issue, in the capitalist euro area the banking and financial sectors become a central mediation unit. The state, in the face of the government (the Treasury), "is forced" to borrow indirectly through the debt market, and only indirectly, via the banking system, can reach the balance sheet of the Eurosystem. Here, repressed consumer market inflation is absorbed by the banking and financial sectors through the processes of financial repression and inflation of sovereign bonds. It is here, where hard budget constraints for governments would normally be expected, that we are seeing instead soft monetary constraints. Unlike socialism, where equilibriums are reached by real variables and volumes in the consumer market, in the euro area equilibriums are mostly in monetary terms and are carried out through prices, especially the prices of sovereign debt and a number of other financial assets. Empirically, there is repressed inflation in the consumer goods market in both the socialist system and the euro area, but open inflation in the asset market in the Eurozone. In the latter case, most of the excess liquidity is contained in the financial sphere because transmission to the real sphere through the credit or budget channels has remained relatively limited²⁸.

Scheme 1 Institutional configuration of the socialist planned economy (left) and the European social market economy (right).



²⁸ This is no longer the case since the Covid crisis.

Source : authors, the dotted market represents the segment through which the system is adjusted.

Continuing the analytical parallel with Kornai's theory of the socialist planned economy, on the institutional level, the post-2008 Eurosystem and the ECB can be seen as a kind of planning authority (Monobank) that creates liquidity overhang, forced liquidity/"savings" and debt market deficits. In the last ten years, the Eurosystem and the ECB have virtually monopolized the sovereign debt market as well as bank liquidity. The purchase of sovereign debt is planned for months to come, so are interest rates, and the interbank liquidity market has virtually ceased to exist. In this sense, we can draw a parallel with the behaviour of the Monobank in the socialist economy, where it held a monopoly on financing investment and providing liquidity in the economy. Generally speaking, Eurosystem monetary planning authority, through financial repression, i.e., through administrative and non-market methods applied to the financial sector, diverts financial resources from the private sector and channels them to the public sector, to finance sovereign debts. This way, significant resources are being lost that would otherwise go into private credit (see measurements in Becker and Ivashina 2018)²⁹. With the requirements to maintain high capital buffers (anticyclical and systemic), and a number of other regulations, on dividends for example, banks and the financing of the economy are virtually nationalized, and this hinders the accumulation of productive capital (Artus 2021).

Evidence of the financial repression and nationalization of money supply is the many times greater increase in the monetary base compared to the money supply, which compensates for the contraction of credit, and which can be interpreted as a process of moving to a "100% money" system (Artus 2021f , Demeulemeester 2021).

Broadly speaking, the place and behaviour of banks and investors on the financial market is similar to the situation and behaviour of households on the consumer market in socialism. In recent years, the ECB has taken over the functions of the interbank market (similar to the consumer market planning authority in socialism). Commercial banks do not trade with each other, but interact only with the ECB, which provides them with unlimited liquidity. This is precisely the SMC syndrome. Interest rates are artificially and administratively fixed at low levels; zero and even negative (Fig. 4). This "oppression" is carried over to all Eurozone yield curves.

Figure 4 here: Key interest rates in the euro zone

As a consequence of financial repression, sovereign bonds' prices become artificially inflated (this is artificially induced in the sovereign debt market). In this configuration, interest rates and bond prices do not reflect the actual level of issuer risk. The risk premium remains hidden in the balance sheet of the Eurosystem, it "sinks" into the enormous excess of liquidity. It should be noted that this model leads to a loss of information and destroys banks'

²⁹ A similar phenomenon has been studied in relation to Japan's decades-old recession (Schnabl and Murai 2020).

incentives³⁰. In the socialist planning economy, enterprises and their managers did not have feedback and incentives to react to the planning center, and there was information asymmetry between the planning body and state-owned enterprises. Debt issuers (governments) and banks are today in the same position vis-à-vis the Eurosystem. And this, despite monetary authorities claiming that they concentrate information and can manage a financial repression process.

The Eurosystem governs and plans the financing of the public debts of euro area Member States, and like any rationing (similar to households' rationing under socialism), it is egalitarian and information on consumers, in this case issuers, is lost. The loss of information and the deformation of information signals, together with the distortion of incentives, is a major problem for any centralised management of economic processes (Hayek 1945).

Financial assets where there is a mismatch between yield and risk can be regarded as "low quality" or "unsafety assets". In this sense, there is a shortage of quality and safety assets in which banks, institutional and individual investors could invest. By analogy with Keynes's "liquidity trap," Ricardo Caballero and Emmanuel Farhi talk about the existence today of a "safety trap" and "safety asset shortages" (Caballero and Farhi 2017).

The lack of secure and non-negative yield assets also puts most central banks, and above all those of peripheral or semi-peripheral countries, to the test. These banks find it difficult to invest their foreign exchange reserves, which they maintain to support exchange rates and to service their external liabilities. Currently, many central banks are incurring losses, their monetary income (seigniorage) is negative. They are forced to maintain large proportions of their foreign exchange reserves in cash³¹. A number of institutional intermediaries, such as pension funds, suffer similar losses. In a nutshell, while there was a shortage of quality goods in socialist economies, today there is a shortage of quality fixed income assets.

Another important channel of influence of monetary authorities on the structure of euro area economies is the collateral policy (ESCF) (ECB 2021). Collateral are assets that banks pledge as guarantee to the central bank to obtain liquidity. The main components of the collateral policy are the designation of eligible assets, the haircut levels associated with the ratings of these assets, and the valuation of the assets (market or theoretical). Since the beginning of the crisis, the ECB has significantly relaxed the collateral requirements. The range of eligible assets has been considerably broadened. For example, whereas in 2004 the volume of eligible assets was €8 trillion, in September 2021 it is €16 trillion, of which €9 trillion are central government securities. Accordingly, the amounts used are 1 trillion for 2004 and 3 trillion for 2021. Assets with very low liquidity, those with low ratings, were included, and the possibility

³⁰ The risk premium on equity assets is growing, but it does not provide any information on their return. The fundamental value of assets no longer exists (it is explained by the "portfolio rebalancing model"), and this completely undermines the effective matching of savings and investments (Artus 2021a,b,c).

³¹ For example, on average in 2020, mainly due to the pandemic but not only, the Bulgarian Central Bank holds about 16% of its assets in cash, calling it "investment banknotes" (BNB 2021, p.41). It is no coincidence that Patrick Artus speaks of "investment demand for money", "money as part of wealth", and proposes a modification of the ISLM model (Artus 2021e). Currency in circulation on the Eurosystem's balance sheet is growing at a sustained pace. An analysis of the demand for euro outside the euro area was done in Lalouette et al. (2021).

of pledging credit claims was given. Credit claims doubled during the pandemic period and reached 0.9 trillion in Sept. 2021. The last ESCF easing was in April 2020, when the haircut on all assets was reduced by 20%, and assets rated below BBB- to B- (with higher haircuts³²) were included. Greek sovereign debt securities were also included again. According to Nyborg (2017), the vast majority of pledged assets were not marked to market, but their theoretical value was taken. There have been "strange" increases in the ratings of a number of illiquid and risky assets (e.g. linked to the DBRS Morningstar rating agency). Nyborg summarises thus:

"My general point here is that the incentives created by central bank's collateral framework may affect the production of different eligible collateral and underlying real assets. [...] The conclusion that emerge are that the ESCF is biased toward low-quality collateral, does not actively use markets but instead impinges on market discipline, and, in conjunction with full allotment policy, has been used to facilitate indirect bailouts over the course of the crisis. [...] Overall, the evidence points to (i) a preference among banks for using lower-quality collateral in repos with the Eurosystem; (ii) an increase in the relative usage of lower-quality collateral over time; and (iii) and increase in the production of lower quality collateral over time. [...] The hypothesis that the collateral framework and monetary policy in general, is subject to politics is consistent with the commonly held view that the euro is a political, rather an economic, creation. " (Nyborg 2017, p. 22, 29, 58, 277)

Discretionary collateral policy allows the central bank to influence not only the macroeconomic level but also the microeconomic and structural level, i.e., to directly change the relative prices of financial assets and hence the relative prices of the real assets underlying them. The ECB directly influences the decisions not only of banks but also of investors and, in general, of economic agents who are linked to the assets that these banks use as collateral. The monetary authorities create an artificial demand for low-liquidity and generally poor-quality assets, which pulls down their supply. In particular, the 'production' of public debt is stimulated, for which the issuers (governments) do not have a substitute to replace the role of the market. The interbank market, where quality and liquid collateral is required, is dying. This generally destroys the informational state of the system, and economic agents make wrong decisions. The above lies at the heart of the criticism of the ESCF by economists such as Sinn (2014, p. 150-180, 2020) and Nyborg (2017), a criticism that forces the ECB to respond with a major report (Bindseil and al. 2017). Despite the ECB's counter-arguments, nothing changes the fact that the eurozone's monetary authorities concentrate enormous power to influence economic, financial, investment, and other decisions by economic agents.

The ESCF also points to another ongoing process which, despite resistance, is gaining momentum and is emerging as a leading objective of the Eurosystem's monetary policy. This is about "greening" monetary policy, within the scope of its mandate, and actively involving the Eurosystem in the fight against climate change. Many economists are proposing profound changes and the Eurosystem leaders are also taking an active stance (Lagarde 2020, Schnabel

³² This haircut is logical in the context of risk management rules and is close to Bagehot principles. However, some economists interpret it as a restriction on banks and credit (Vestergaard and Gabor, 2020).

2021a³³). According to Schnabel, the Eurosystem could, for example, commit to buying green bonds under the APP (they currently account for 1.4% of the total) and also steer its collateral policy towards green assets³⁴. As a result of these "green" measures, as well as changes to overall monetary policy, Schnabel states that Eurosystem policy in the future will not be guided by "market neutrality"³⁵ but by "market efficiency". What is interesting here is that the shift to an active policy is seen as a centralised improvement in market efficiency, which, if left alone, could not integrate externalities and risks.

Broadly speaking, the overall pattern of monetary policy, including the collateral policy and the green measures, is unambiguously reminiscent of the positions and functions of the Monobank under socialism. It was directly involved in economic activity and had leverage to influence investment and the development of specific sectors and activities.

The parallels with the manifestations of the deficit in socialism do not stop here: they can be continued. For example, we may also find the phenomenon of "forced substitution", in this case it is about replacing good with bad debt assets. There is a shortage of the most demanded product and a shift to another product that is less desired and/or of lower quality. Specifically, Greek, Italian and Spanish debt securities replace German debt securities on the Eurosystem balance sheet. This is done within the monetary base, with its national sources changing. Specifically, this becomes possible through the TARGET balances and through the movement of cash (see Sinn 2020). In fact, widening the gap of the TARGET balances is a vivid manifestation of the substitution of good with bad sources of monetary base (for example, the German component of a monetary base is replaced by Greek, Italian, etc., see Fig 5).

Figure 5 here: Dynamics of TARGET balances

In the same vein, as a kind of "load" (*'nagruzka'*), is the packaging of bad and good assets within structured assets, etc. The attempts to issue joint Eurobonds, as well as the Initiative of the European Commission of May 2018 to launch SBBS (Sovereign Bond-Backed Securities) and various projects for "Europe Safety Assets", are eloquent evidence of the aspiration to jointly sell good quality and poor-quality debt assets³⁶. To paraphrase Kornai, there is a forced change in output composition (here debt securities), because there is an input deficit (here savings, i.e. no one wants to buy these bonds).

«SBBS are a diversified pool of euro-area sovereign bonds which include sovereign bonds from all euro area Member States according to their economic weight. When buying SBBS backed by that pool, investors can choose to buy the higher or the lower risk securities, depending on their risk appetite. The highest-risk securities would be first in line to bear any losses on the underlying pool should they arise, but would in exchange pay investors a higher return. As a result, the senior

³³ Cristine Lagarde is Governor of the ECB and Isabel Schnabel is a member of the ECB's Executive Board.

³⁴ In addition to these two measures, Schnabel points to the inclusion of climate risks in the bank's models as well as in stress tests. On green collateral, see Dafermos and al. (2021).

³⁵ This means that the ECB buys securities in proportion to their relative market capitalisation.

³⁶ See the discussion in De Grauwe and Ji (2018).

securities that would bear losses only after the highest-risk securities are fully wiped out, would be low-risk ».

(https://ec.europa.eu/commission/presscorner/detail/en/IP_18_3725).

Of course, the European Commission reasons the above projects with the need for portfolio diversification, the reduction of the overall level of risk, as well as the integration of national financial markets, etc.³⁷ In the days of the pandemic, a new trend has emerged, namely of banks offering a number of services unrelated to their banking activities such as online sales, food deliveries, etc.

Macro and micro-prudential regulations of the banking system, within the newly created Banking Union, are also a vivid manifestation of a financial repression aimed at channelling resources towards sovereign debt securities. Under the new requirements for calculating banks' own funds, for example, sovereign debt enters at a risk weight of zero. The same effects are exerted by banks' liquidity regulations (Kedan and Veghazy 2021).

The huge liquidity overhang (similar to that of socialism) today manifests itself in the form of "forced liquidity/"saving"", of financial institutions, especially banks. Evidence of this is the huge volumes of excess liquidity (excess reserves and balances on deposit facilities) that banking institutions maintain on their accounts with ECB and NCBs, although this brings them losses (e.g. interest rates on deposit facilities are negative, currently (- 0.5%), see Fig. 6). Banks also keep large amounts of banknotes thus incurring costs for storing. All these forms of liquidity overhang arise from the monetisation of public debts and are artificially and temporarily sterilised, i.e. "held in reserve" blocked in the Balance Sheet of the Eurosystem³⁸. Sustainable currency in circulation growth is also a well-visible process (Fig. 7).

Figure 6 here : Reserves held by financial institutions in the euro zone

Figure 7 here : Increase in currency in circulation in the euro zone

Besides the forced savings of banks and financial intermediaries, today we can also add the forced saving of households and business – the result of the pause in consumption during the pandemic (e.g. in France, savings of 15,1% of GDP rise to 21,4%). In addition to the protective savings of households, the safety savings of enterprises can also be included, in particular the phenomenon of "precautionary loans". For example, in most EU countries, businesses resort to bank loans, which are subsequently not used for real investments, but are kept in liquid form. It can be assumed that part of these loans will be used to pay tax deferrals and other financial obligations. According to Artus (2021d), in France, corporate debt has increased since the start of the COVID crisis by 150 billion Euro, but french companies' cash reserves have increased by EUR 180 billion over the same period. If we also consider tax and social contribution exemptions, the budget constraint of enterprises has considerably softened, both on the credit side and on the tax side, during the pandemic.

³⁷ Examples of hybrid assets abound in financial markets (USA, for example).

³⁸ The safety behaviour of banks in the face of systemic uncertainty was also evidenced by the fact that 95% of EU banks do not intend to use the opportunities given to them to use capital buffers in pandemic moratoriums.

As with planned socialist economies, here too the velocity of money has been declining for years. Thus, for instance, from the end of 1999 to the end of the first quarter of 2020, the velocity of money fell from 1.5 to 0.75 in the euro area and from 2.2 to 1.2 in the USA (see Fig. 8). Over the same period, the multiplier dropped even more drastically, from 10 to 4 in the euro area and from 8 to 4 in the USA (see Fig. 9)³⁹. We recall that under socialism the multiplier did not exist due to the absence of a two-tier banking system (the relationship between the Central Government and the Monobank was regulated by the plan⁴⁰). And finally, inflation on the consumer goods market as measured by the CPI is extremely low (see Fig. 10).

Figure 8 here : Velocity of money in the euro area

Figure 9 here : Monetary multiplier in euro area

Figure 10 here : Euro area CPI inflation

At this point, we will note that a number of current trends, actually occurring or still under discussion, fit into the processes of financial repression and aspiration to absorb imbalances through the debt market. These include the central banks' Digital Currency Issue (CBDC) projects or those proposed to completely abolish cash. These are all envisaged measures aimed at keeping interest rates low and infinitely negative and refinance public debt at a low cost. Along the same lines we can interpret the booming real estate market, the rise in the price of gold and bitcoin, the price of equities, as well as the spread of convertible bonds, etc. In fact, inflation finds a way out in these segments, and increases income and wealth inequality because the poorer do not own capital assets (see Israel and Schnabl 2020).

IV Concluding remarks

In this article, we first intended to pay tribute to the prominent economist János Kornai, who died on the 18th of October 2021, and secondly to propose an adaptation of some elements inspired by his theory of the shortage economy, developed to explain the functioning of the socialist planned economy, to the analysis of the state of the European debt economy and today's monetary policy in the euro area. As stated at the outset, our intention is not to transpose Kornai's model to euro zone economies, but to emphasize its heuristic potential while showing that similar phenomena can be observed today in a different institutional context and within a subsystem of the global economic system. In particular, our model proposes an answer to the mismatch between the significant increase in monetary aggregates and the almost negligible rise in consumer prices (the "repressed inflation" phenomenon observed in socialism).

Unlike socialism, where these disproportions were accompanied by a shortage of goods and services and repressed or diverted consumption, today they manifest themselves and focus on the sovereign debt market. More precisely, this is done through the model of 'financial repression' implemented through the mechanisms of the ECB's 'new' expansionary monetary

³⁹ Bussière and al. (2020).

⁴⁰ This complex and sometime tense relationships resemble the relationship between the ECB and the NCBs within the Eurosystem.

policy. Repressed interest rates, massive purchases of public debt, as well as new banking regulations, lead to the emergence of a new type of deficit – a deficit of "quality debt", a deficit of quality and safety financial assets. Artificial inflation is created in the sovereign debt market. This in turn triggers the emergence of huge volumes of liquidity overhang, which has taken the form of trillions of euros deposited by banks in the Eurosystem balance sheet. In general, just as socialist households suffered losses in the consumer market, today banks and investment firms, and individual investors lose out on the debt market. Banks, of course, subsidise these losses, but this cannot last forever. In the singular context of the pandemic, a new stage has been reached including forced savings from households and soft budget constraints for enterprises.

The parallels with the socialist planned economy also raise the question of the possible exits from this state of financial repression and repressed inflation. As is known, imbalances in socialism, liquidity overhang, deficit and social discontent caused the planning system to collapse. Imbalances and liquidity led to hyperinflation and caused deep economic and social disruption in some countries in the late 1980s or early 1990s. As for today's situation, economists are divided. Some believe that imbalances in the debt market are not dangerous; they reflect deep structural and demographic changes that have occurred, and that they can slowly but successfully be resorbed (e.g. Bonnafe 2021). Others are of the opinion that accumulating imbalances can lead to a new and unprecedented financial crisis, and that it is necessary to proceed as soon as possible to exit the financial repression model and restore the positive interest rates levels (e.g. Hoffman 2017, Schnabl 2018). Since the autumn of 2021, when we revise this article, inflation has begun to make its way into the commodity market as a long-term trend, despite the ECB's official position that it is a rather one-time increase in the CPI index.

In a broader context, one interesting comparison would be with current trends in emerging and developing countries (Turkey, Brazil, Argentina, Nigeria, Ethiopia, even Russia and China, etc.), where a similar policy of monetary nationalism, i.e., low interest rates and quantitative easing, leads to the opposite processes to those occurring in the developed countries: strong inflation, exchange rates depreciation, and introducing currency controls, etc. One explanation would be the lack of a developed debt market in national currency in these countries, as well as the inability of their Central Banks to carry out a prolonged financial repression, i.e. to keep interest rates low, below equilibrium interest rates and to redeem public debt. This is determined by the balance of payments restriction, the need to maintain the exchange rate, and generally by the subordinate and limited use of their currencies.

And then there remains the essential question about the deep institutional foundations of the presented models, which could explain and derive the structural imbalances, bringing them together into a common conceptual model. In his works on socialism, János Kornai proposed the institutional form of "state paternalism". By analogy, we could develop the model of "monetary paternalism" characteristic of modern European debt economy after 2008. This is so, because the ECB and monetary policy are at the heart of the European model, acting as a central authority of coordination. Monetary paternalism is best embodied by the famous words of former ECB Governor Mario Draghi in 2012 that the ECB "is ready to do whatever it takes to preserve the euro". Indeed, the single currency appears as the supreme and emblematic figure of European unity, towards which the citizens' demand for protection

and stability is being addressed. Meeting this expectation is a major challenge legitimizing the very existence of the euro zone.

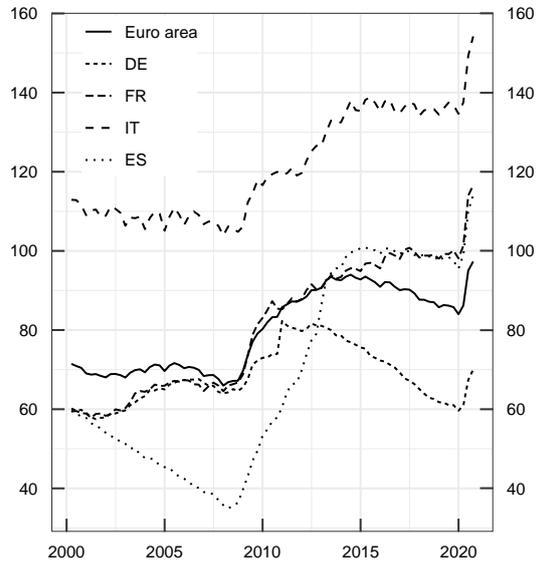
Table 1

The socialist consumer goods market in the past and the European debt market today (main features)

Socialist Planned Economy Soft Budget Constraint (micro level)	European Sovereign Debt Economy Soft Monetary Constraint (macro level)
<p>Consumer Goods Market</p> <p>Main Actors: Planning agencies, Monobank (Main Office, Branches), Households</p> <p>Institutional context: state paternalism</p>	<p>Sovereign Debt Market</p> <p>Main Actors: Eurosystem (ECB, NCBS), Governments, Banks, Institutional Investors (e.g. Pension funds)</p> <p>Institutional context: post-2008 monetary paternalism</p>
<ul style="list-style-type: none"> ▪ Monetary overhang (liquidity) as a result of SBC by central planning authorities towards state-owned firms, insatiable demand, investment hunger etc. (two separate monetary cycles, outflow of money from the non-cash to the cash sector) ▪ Chronic shortages (normal state) and repressed inflation, consumer prices are officially fixed, velocity of cash circulation declines, demand for cash rises ▪ Sellers' market, excess demand (no adequate supply) ▪ Manifestations of shortage (regulation mechanisms) <ul style="list-style-type: none"> - Queuing, waiting lists, rationing - Forced spending - Forced substitution of goods, obsolete stocks - Forced saving - Parallel and shadow markets, etc. ▪ Adjustments mainly via quantity, real variables, planning on consumer market and discretionary monetary measures 	<ul style="list-style-type: none"> ▪ Financial repression as a manifestation of SMC, administrative regulation of interest rates (zero, negative values, artificial pulling up of sovereign bond prices, maintaining low-cost financing of public debt) ▪ Shortage of quality and safety debt securities (quality asset is when the yield corresponds to the risk), huge quantity of assets but of low quality, "safety trap, safety asset trap" (more than "liquidity trap") ▪ Forced liquidity/saving for banks (huge amount of Excess Reserves at the Eurosystem, even when Deposit Facility rates are negative), banks hoard cash (different ideas are put forward as a solution, e.g., the idea of DCBC, to abolish cash etc.) ▪ Monetary overhang, forced liquidity of banks is part of the money base but not accounted for in the money supply ▪ Forced substitution of debt securities or forced change of output composition as source of Eurozone money supply ("bad" Italian, Spanish and Greek securities replace "good" German ones or are packaged together; Eurosystem balance sheet masks this substitution, but TARGET balances disequilibrium shows it, etc). ▪ In addition, since the start of the pandemic, March 2020, we observe forced household saving and SBC for enterprises ▪ Adjustments via quantity, monetary variables and price (interest rate) on the debt market (financial repression)

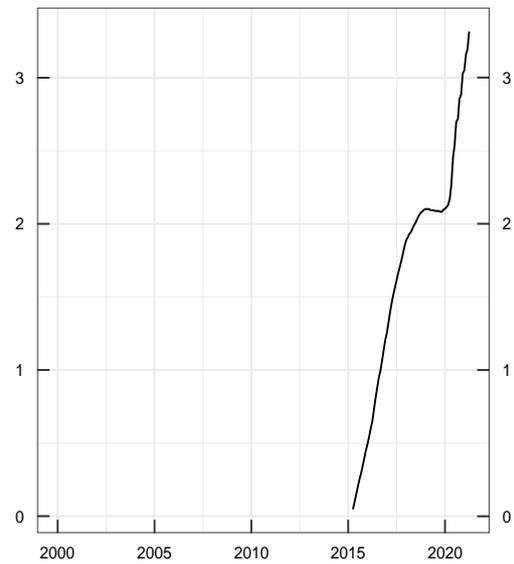
Figures 1 to 10

Figure 1. Public debt dynamics in the euro zone (per cent of GDP)



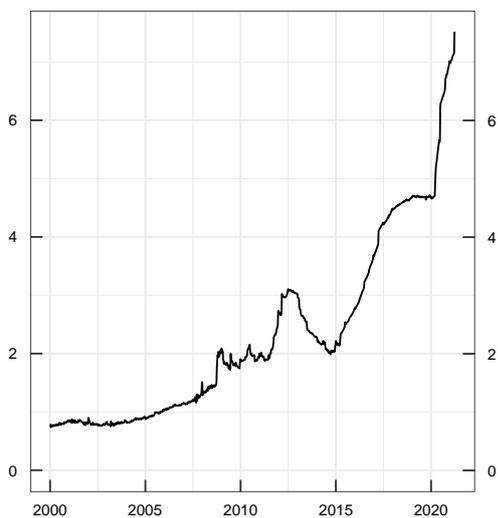
Source: ECB, Statistical Data Warehouse.

Figure 2. Public debt repurchased by the Eurosystem (bn. EUR)



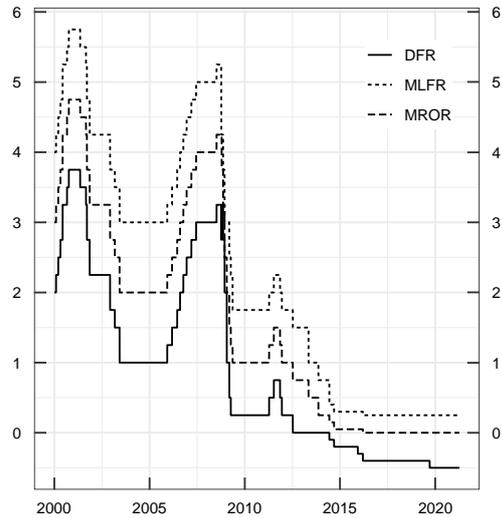
Source: ECB, Statistical Data Warehouse.

Figure 3. Eurosystem balance sheet ((bn. EUR))



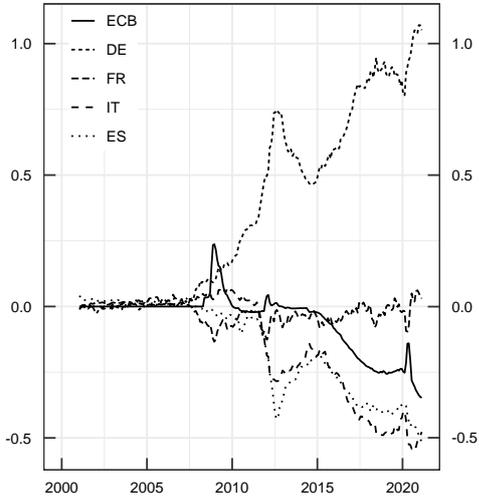
Source: ECB, Statistical Data Warehouse.

Figure 4. Key interest rates in the euro zone (%)



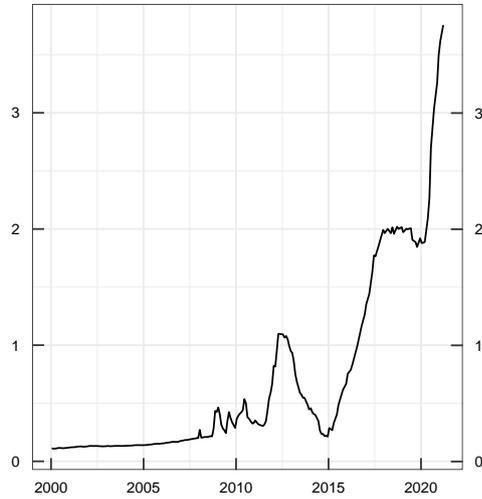
Source: ECB, Statistical Data Warehouse.

Figure 5. Dynamics of TARGET balances (bn. EUR)



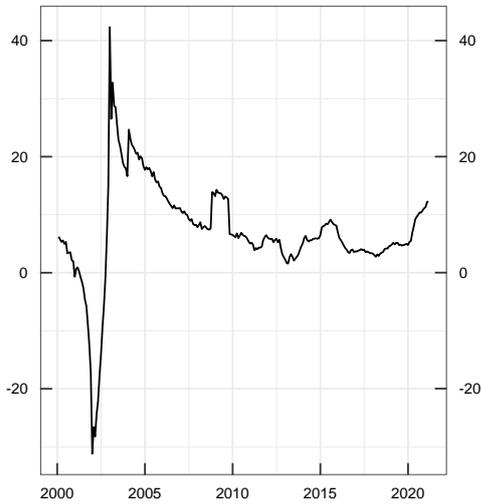
Source: ECB, Statistical Data Warehouse.

Figure 6. Reserves held by financial institutions in the euro zone (bn. EUR)



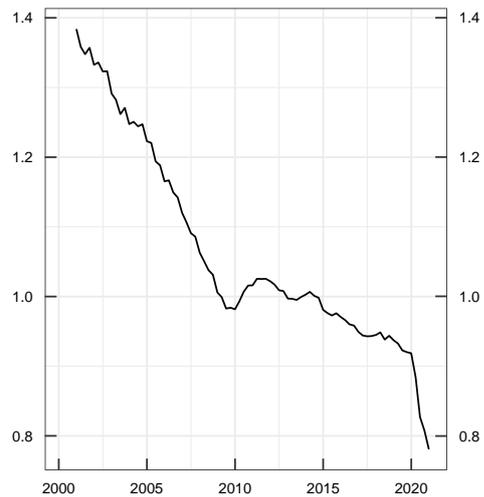
Source: ECB, Statistical Data Warehouse.

Figure 7. Currency in circulation in the euro zone (annual rate of change)



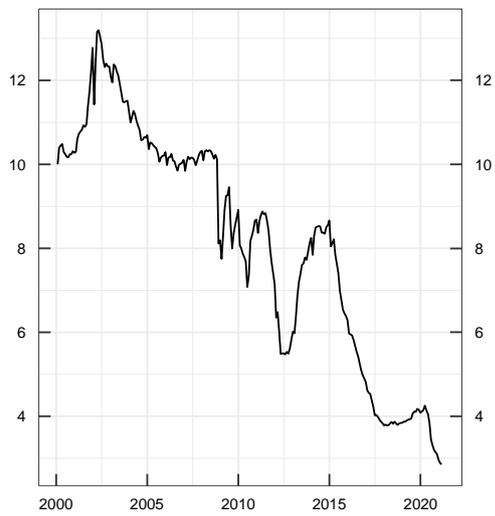
Source: ECB, Statistical Data Warehouse.

Figure 8. Velocity of money in the euro zone (annual GDP to M3)



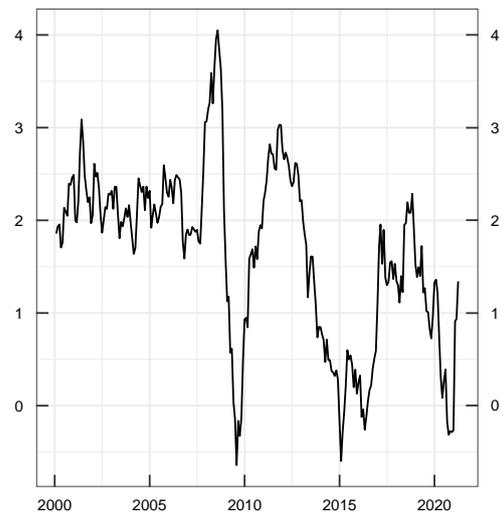
Source: ECB, Statistical Data Warehouse.

Figure 9. Monetary multiplier in the euro zone (M3 to Base Money)



Source: ECB, Statistical Data Warehouse.

Figure 10. Inflation in the euro zone (CPI annual rate of change)



Source: ECB, Statistical Data Warehouse.

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