

I. ARTICLES

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**THE DIVERGENCE BETWEEN
ACTUAL CENTRAL BANKING
AND CONVENTIONAL ECONOMICS**

Actual money creation and the conduct of monetary policy are in some respects at variance with what is assumed in mainstream economics. Nonetheless, in turbulent times central banks have tended to take decisions that followed the widely accepted best practice. The resulting consequences were very unfortunate on at least two occasions. In the early 1930s, the dominant liquidationist doctrine prevented the Federal Reserve from providing commercial banks with adequate liquidity to stop runs by depositors. In the 2000s, the belief that stable inflation is sufficient to keep the economy on an equilibrium growth path prevented central banks from hiking interest rates enough to stop unsustainable lending booms. In both cases the central banks' decisions were not questioned as they were in line with the prevailing beliefs of the day. Both experiences call for highlighting the divergences between how central banks are assumed to operate in mainstream economics and how they operate in practice. Identifying these divergences should improve the democratic accountability of central banks and provide inspiration for new advances in research.

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1. INTRODUCTION

Academic economists are correct in believing that the impact of both new classics and new Keynesians on practical policymaking in central banks is relatively small (Mankiw 2006). In contrast, the general public believes that central banks conduct their monetary policy as it is presented in standard economics textbooks. In reality, however, central banks are much more pragmatic than one would judge from their rhetoric. Yet, upon being challenged by difficult choices, they have tended to follow what was widely accepted to be the best practice. In the 1930s and in the 2000s, this contributed to financial crises and prolonged recessions.

In the early 1930s, the Federal Reserve, guided by the liquidationist approach, did not provide enough liquidity to American banks to stop the

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runs by depositors (Cogley 1999, Wheelock 1992). This caused the mass bankruptcies of banks, which transformed the initial recession into the Great Depression. In 2007, having learned from past mistakes, the central banks provided ample liquidity to banks as the recent crisis unfolded. However, what central banks had failed to do beforehand was to tighten monetary policy enough to contain unprecedented lending booms, the bursting of which led to balance sheet recessions rendering conventional monetary policy ineffective (Koo 2013).

The similarity between the central banks' actions in the 1930s and the 2000s lies in their consistency with what was regarded as the best practice derived from the then dominant theoretical concepts. In the 1930s, the liquidationist approach was advanced by some of the most eminent economists of that era such as Hayek, Robbins, and Schumpeter (De Long 1990)¹. In the 2000s, the best practice was derived from mainstream economics represented by the New Keynesian Synthesis (NKS) asserting that inflation alone is a sufficient indicator for interest rate policy (Alesina et. al. 2001).

The NKS was ill-adapted to offering correct guidance during the unsustainable lending booms in the 2000s, because it was based on the Loanable Funds Theory (LFT) asserting that the volume of credit is always optimal for the economy. The NKS also overlooked the possibility of banks taking large losses, which was the primary reason behind the severity of the recent global banking crisis (Jakab, Kumhof 2015).

In practice, most standard academic textbooks reflect almost exclusively the conventional views on money creation and the conduct of monetary policy (Boermans, Moore 2008). As textbook content is a powerful factor shaping public opinion and politicians' beliefs, the absence of non-mainstream views still biases the public discourse on central banking, e.g. by taking for granted that quantitative easing (QE) programs result in "mass money printing," which is strongly at odds with the reality (Sławiński 2016).

The actual money creation process runs in reverse order to what is still presented in standard macroeconomics textbooks, however this fact seldom

¹ It can be rightly assumed that the Federal Reserve failed to provide enough liquidity to the banking system, because it was adhering to the real bills doctrine (Bordo 2014). Yet, there were several waves of banking panic between 1930 and 1933, and the Federal Reserve was aware of the scale of the crisis. In the 1930s, some officials at the New York Fed proposed purchasing government securities to supply banks with the necessary liquidity (Cogley 1999). The cause of the rebuffing of this proposal was most probably the liquidationist doctrine (De Long 1990).

receives enough attention. Before 2007, only a handful of publications pointed out that money creation and the conduct of monetary policy were in several respects different from that presented in the textbooks. Such papers were usually written by central bankers (Holmes 1969), academics working for central banks (Goodhard 1994, 2009, Blinder 2006), or Post Keynesian economists (Moore 1988).

Post-2007 experiences started to reshape conventional thinking on money creation and the role of central banking. An indication of the underlying change are central banks publications highlighting that the process of money creation differs from that in standard textbooks (McLeay et. al. 2014).

The goal of this paper is to highlight the breadth of divergence between actual central banking and conventional economics. The inadequate acknowledgement of this disparity impedes both central banks' communication policies and their democratic accountability. However, the burden of eliminating these divergences should not rest exclusively on the central banks. The task also calls for readjusting existing academic curricula by extending them to cover non-mainstream economics.

The best-known example is Hyman Minsky's financial instability hypothesis, which was "rediscovered" for academic and public debate only during the recent crisis (Federal Reserve Bank of San Francisco 2009, McCulley 2009), despite the fact that it had envisioned the exact scenario which unfolded twenty years after the publication of Minsky's book (1986). The reason for the financial instability hypothesis receiving such belated attention was that it represented the Post Keynesian school largely ignored by mainstream economics.

The paper also highlights the two underestimated areas of central banking research which prove to be of critical importance in light of the recent global banking crisis and the Great Recession it caused.

First is the commercial banks' role in the creation of interbank deposits (wholesale funding) on top of their widely known role in the creation of deposit money (retail deposits). It was mainly the interbank market funding which had financed the unsustainable mortgage booms, that triggered the 2007 crisis. While the capital adequacy standards were tightened for the banks, it may not have solved the problem. The risk remains that the short-term wholesale funding is still dominating among shadow banks i.e. institutions which invest in risky illiquid assets and employ high leverages. They – in contrast to the banks – remain substantially less regulated, so their balance sheets can get easily inflated (Singh, Aitken 2010).

Second, the government role in stabilizing money supply during periods of long-term deleveraging should not be ignored in light of the Japanese experiences. Fiscal expansion can stabilize money supply when the creation of deposit money is falling with the shrinking credit creation. Under the circumstances, the factor which can stabilize money supply is a fiscal expansion which, as was in Japan, converts the excess savings into money supply. Such possibility was envisioned by Milton Friedman (Friedman 1948).

The remainder of this paper is structured as follows. Section 2 confronts conventional textbook thinking on money creation with the actual process of its issuance. Section 3 offers a similar comparison for monetary policy. Section 4 identifies new avenues for research on central banking. Section 5 concludes.

2. MONEY CREATION

The main difference between the conventional perception of money creation and its actual issuance is that the former accepts the loanable funds theory, which limits the role of commercial banking to lending out paid-in deposits.

2.1. Money creation in conventional economics

The standard textbook description of money creation is derived from presupposing the Loanable Funds Theory (LFT). Under the LFT, it is the banking system as a whole that creates money, not individual banks. The theory rests on the credit multiplier — where a customer of one bank makes payments to customers of other banks and the latter can use these funds to extend their loans (Carpenter, Demiralp 2010). If this was really the case, banks could be seen as, in fact, lending goods and services which were not purchased at a given moment of time (Jakab, Kumhof 2015). Therefore, under the LFT, money is reduced to being a neutral veil covering the real economy.

The difference between the LFT and monetarism is that the latter highlights that money may cease to be a neutral veil if the central bank makes a mistake, as was the case in 1931-1933 in the United States, when the Federal Reserve fell short of fulfilling its function as the lender of last resort. The Fed's failure to provide banks with adequate liquidity during the ensuing run on banks led to massive bank bankruptcies, which produced a 30% fall in money supply and transformed the initial recession into the Great Depression (Friedman, Schwartz 1963, Simons 1936).

Monetarism stresses the conditions which are necessary to ensure money neutrality. The way to achieve this is to shield money creation from potential

mistakes made by the central banks. Friedman believed that the central banks should adhere to the rule of increasing money supply at a constant rate so as to adjust it to the demand for money consistent with the potential rate of GDP growth. Since the money multiplier, i.e. the ratio of the money supply to the monetary base, was assumed to be stable, Friedman proposed controlling the money supply by controlling the monetary base.

He was convinced that the operational target of monetary policy should not be the interest rate but rather the monetary base. His view was based on empirical findings showing significant and variable delays between interest rate changes and their impact on the economy, which creates the risk that an interest rate cut or hike might not be appropriate in the future (difficult to forecast) state of the economy (Friedman, Schwartz 1963). The other reason which persuaded Friedman against central banks actively using interest rate policy was uncertainty about the actual level of the unobservable natural interest rate – a crucial reference point for adjusting interest rates.

2.2. Actual money creation

“In the real world banks extend credit, creating deposits
in the process, and look for the reserves later”

(Holmes 1969).

As stated above, banks create money by extending loans (Goodhart 2009). An increase in liquid reserves is not required to create new loans and deposit money. It is only *after* creating new deposits that banks adjust their liquid reserves in accordance with the minimum reserve requirement. Thus, the direction of causality runs from money to the monetary base, i.e. in reverse order from that presented in the textbooks (Tobin 1963, Moore 1988, McLeay et. al. 2014).

The sequence of money creation is that a commercial bank issues deposit money by extending a loan and then it looks for liquid reserves. The reason is not just the obligation to keep liquid reserves at the required level. Banks cannot settle their mutual obligations using the deposit money they create. In the payment system they must use legal tender, i.e. liquid reserves which they hold with the central bank. There are two ways to acquire them: selling assets to the central bank or borrowing liquid reserves from the central bank or other commercial banks. An additional reason for keeping liquid reserves is that banks draw paper money from their current accounts to meet their customers cash withdrawals.

Hence, the deposit money, which is created by commercial banks, may play the role of universally accepted means of payment, because it is convertible into liquid reserves and paper money being the legal tenders issued by the central bank.

In times of economic stagnation and depressed expectations, the money multiplier tends to decline sharply. A spectacular illustration was the 2007 global banking crisis when central banks' vast injections of liquidity into banking systems did not produce an increase in credit or the money supply (Cukierman 2017, Evans et al. 2004).

Also, contrary to what is assumed in the textbook credit multiplier, the volume of liquid reserves does not limit the ability of banks to extend loans and create money, because they can borrow any amount of liquid reserves from the central bank if only they possess eligible collateral. In fact, this is the main difference between the gold standard and modern monetary systems. Under the gold standard, commercial banks also created money "out of thin air" by extending loans, but the supply of liquid reserves was limited by the supply of gold, which put a firm cap on credit and money creation².

The textbooks postulate that central banks can control the money supply by controlling the monetary base. If it were the case, central banks would have adopted the monetary base as their operational target instead of relying on interest rates as they do today. There is a practical reason behind this choice though – the demand for the monetary base cannot be forecasted with a reasonable degree of accuracy (Goodhart 1994).

3. MONETARY POLICY

The main differences between conventional textbook and actual monetary policy arise from the former's adoption of the rational expectations hypothesis (REH) which simultaneously minimizes the role of monetary policy and overstates the effectiveness of interest rates.

3.1. Monetary policy in conventional economics

Central banks are still presented in standard macroeconomics textbooks as institutions which tend to stimulate growth at the cost of increasing inflation, which is referred to as *inflation bias*. Another characteristic trait of

² Under the gold standard, inflation stability was to a large extent a matter of favorable coincidence, because the supply of gold (due to new discoveries) had been growing more or less at a rate consistent with long-term GDP growth in the world economy (Cassel 1936).

the standard textbooks is that they usually present the monetarist and the New Keynesian Synthesis (NKS) without sufficiently highlighting that the difference between the two lies in the fact that the former is based on adaptive expectations while the latter relies on the rational expectation hypothesis (REH).

Adaptive expectations allow monetarists to explain that, after inflating money supply by the central bank, economic agents initially take the nominal rise in wages for a real increase. The resulting economic growth acceleration continues until economic agents realize that the increase in wages was only nominal.

Friedman pointed out that the Phillips curve (illustrating the relationship between unemployment and inflation) is not stable, because successive periods of monetary expansion tend to bring only short-term growth acceleration at the cost of a permanent rise in inflationary expectations. He believed that the proper tool for shielding the economy from central banks' inflation bias should be their relinquishment of discretionary monetary policy and adherence to the rule of steady growth in the money supply.

The New Keynesians Synthesis (NKS), whose building blocks are New Classical and New Keynesian economics, is based on the REH. Accordingly, the NKS argues that the central banks' attempts to accelerate growth through inflating the economy are futile even in the short run, because economic agents know in advance when a central bank will be prompted to initiate monetary expansion. They know *ex ante* that there will be only a nominal and not a real rise in wages. This is the main point of the time inconsistency hypothesis, which asserts that central banks are usually not able to accelerate economic growth even in the short term (Kydland, Prescott 1977).

Adopting the inconsistency hypothesis means that central banks may succeed in accelerating growth only through engineering unexpected (surprise) inflation, which firms would initially interpret as a signal of rising demand for their products and would expand production until realizing that they had observed only a general rise in inflation (Lucas 1972). Nowadays, such a move is inconceivable as central banks make announcements of a hike or a cut in interest rates long before their decisions are implemented.

When mainstream economics adopted the REH, it artificially reduced the monetary policy's role as a countercyclical tool. The REH implies the perfect coordination of the decisions of economic agents. This is why New Classics, who also assume perfect price and wage flexibility, claim that the economy always remains on an equilibrium growth path (GDP volatility

results mainly from technological shocks), which renders monetary policy unnecessary. New Keynesians allow for some price and wage rigidities, which permits GDP to divert from its potential. Hence, they give some role to interest policy with the Taylor rule as its benchmark.

3.2. The actual conduct of monetary policy

“...a huge amount of ink has been spilled on the time consistency debate and so-called inflation bias – another debate that I consider to be over...”

(Blinder 2006).

Standard textbooks often point to central banks' inflation bias in the context of Friedman's worries that they may want to exploit the Phillips curve and trigger a price-wage spiral. A precedent was set in the 1970s when the two oil shocks hit the advanced economies at a time when trade unions were exceptionally strong in the then prevalent traditional branches of manufacturing. As global price competition was at that time still weak, firms were generally able to absorb rising labor costs by increasing prices.

An important reason why price-wage spirals were allowed to develop was that central banks' policies were decided by governments worried that tightening monetary policy might raise unemployment figures. Characteristically, in the 1970s, the two central banks which succeeded in stopping the price-wage spirals by sufficiently tightening monetary policy were the Bundesbank and the Swiss National Bank – the only government-independent central banks at that time. This strongly suggests that the alleged inflation bias resulted mainly from central banks' subordination to governments. In fact, after being given independence in the 1980s, the central banks were quick to abandon excessively accommodating monetary policy and stabilized inflation in their countries at the cost of a substantial rise in unemployment (Blanchard 2018; Bean 2006).

As regards textbook assertions that the only way for central banks to boost economic growth is by engineering surprise inflation, a large body of empirical evidence dating from the 1980s proves that preannounced interest rate changes do affect the economy (Mishkin 1980).

The REH incorporated by the NKS not only understates the role of monetary policy as a countercyclical tool, but it also overstates the effectiveness of interest rate policy, especially during recessions. If economic agents were confident about the timing and strength of an expected recovery, an interest rate cut would have a strong and rapid impact

on investment. In reality, uncertainty about the timing and the strength of a recovery tends to delay investment as the uncertainty increases the value of the option of waiting (King 2016).

The main deficiency of the way monetary policy is presented in the textbooks is the belief that the volume of credit is optimal (Keen 2014). The LFT simply assumes that there is no difference between economic agents lending to each other and bank lending. Actually, there is a fundamental difference between the two. Households or corporations are able to lend only the money or savings they possess, while banks can lend funds which they create themselves *ex nihilo* – if they are able (and they are) to convert the deposit money they create into legal tender (liquid reserves) which is necessary for settlements in the payment system.

Under the LFT the banking sector is not a source of instability, because its role is confined only to lending paid-in deposits. The recent global financial crisis proved that Hyman Minsky was right in exposing the large destabilizing potential in the banking system. He reasoned that it is the varying risk perceptions of banks that stand behind the development of an unsustainable lending boom (Minsky 1986).

4. NEW AVENUES FOR RESEARCH ON CENTRAL BANKING

The recent recession is likely to open new fields of research on central banking, one of which is the role of wholesale funding in the development of unsustainable lending booms. The other is the role of governments in stabilizing the money supply during periods of economic stagnation when bank net credit and money creation is falling.

4.1. The role of wholesale deposits in funding unsustainable mortgage booms

“Lehman... began to issue short-term liabilities – such as repos – to fund longer-term assets, just as banks use demand deposits”
(Hoening 2013).

In the textbooks, mortgage loans are financed with long-term funding (savings). Had it been the case, the rate of growth in mortgage loans would have been more or less equal to the rate of GDP growth, whereas before the recent crisis the former was consistently higher. The important source of

funding, which propelled mortgage lending growth, was the rapid increase in the supply of interbank (wholesale) deposits created by the banks themselves (Shin 2011 Honohan 2009).

The fact that wholesale deposits can be created by banks themselves is rarely acknowledged in academic literature and virtually nonexistent in the textbooks. The reason is that it is usually assumed that banks lend to each other only liquid reserves, which are created by the central bank. What the textbooks often overlook is the ability of banks to create wholesale (interbank) deposits in a similar way as they create retail (money) deposits.

Banks have the capacity to create wholesale deposits because they are able (as in the case of retail deposits) to ensure their convertibility into legal tender (liquid reserves) necessary for settlements in the payment system (Pozsar 2014).

The easiest way to create wholesale deposits is to use the repo market (Sławiński 2015). This is how global investment banks fund their large trading portfolios (Morris, Shin 2008). Shadow banks (such as Special Investment Vehicles) also use the repo market to fund their securitization activities (Pozsar 2014). However, shadow banks do not have direct access to liquid reserves at the central bank and they have to obtain credit lines from banks to enable the settlement of their transactions in the payment system. The evidence that wholesale deposits can be created within the financial system is that before the global financial crisis the supply of bank liquid reserves was only steadily growing, while the rapid growth in wholesale deposits was an important driver of unsustainable mortgage booms (Singh, Stella 2012, Singh 2011).

The precipitous fall in prices of the illiquid structured bonds (like CDO³) was the main source of the banks' massive losses (Wilmarth 2009), which triggered a run on the wholesale financing markets (Copeland et al. 2011, Gorton, Metrick 2009) and forced the central banks to start making massive liquidity injections into the banking systems⁴. Most probably, future textbooks will focus on the actual functioning of the wholesale funding markets in a more detailed way than currently is the case.

³ The issuance of the CDOs (Collateralized Debt Obligations) was the outcome of mortgage loans securitization (Acharya et. al. 2010)

⁴ Among the primary dealers of the Federal Reserve Bank are all global investment banks. Thus, after the outbreak of the global banking crisis, the Fed was playing the role of a global lender of last resort (Shin 2011).

4.2. Credit and money creation during balance-sheet recessions

“...the Great Recession in 1990 for Japan and in 2008 for the West demonstrated that private-sector borrowers can disappear...”

(Koo 2016).

A balance-sheet recession happens when the collapse of an unsustainable mortgage boom forces households to start abruptly deleveraging (Koo 2008). This leads to a prolonged recession because households are forced to cut their spending on goods and services for an extended period of time. The Japanese balance sheet recession was caused by the banking crisis in 1990.

The fact that a balance sheet recession brings deposit money creation to a halt has often been overlooked, because when the central banks launched their QE programs it was mistakenly perceived as “massive money printing”. In reality, it was only the central banks’ balance sheets and the commercial banks’ liquid reserves that were swelling up.

There were the two elements which stabilized the money supply despite the fall in bank lending. The first was fiscal expansion partly amounting to a conversion of excess savings into money. The second was a gradual revival of credit and money creation due to the economic recovery facilitated by quantitative easing programs (Sławiński 2016).

The role of governments in stabilizing the money supply is particularly worth highlighting, because the textbooks describe the process of money creation from a central bank’s perspective, yet in Japan the deleveraging process (net debt repayments) took more than a decade. The money supply was not at that time falling because the government was recycling the excess of savings to the economy by borrowing them from banks (by selling them government bonds) and using the borrowed funds to cover current expenditures and transfers which was fueling the bank accounts of households and firms, i.e. the money supply⁵.

In Japan the outcome of the government’s fiscal expansion was a sharp increase in public debt. What is still very seldom acknowledged is that this

⁵ Some economists analyzed the possibility of budget deficit money financing. Adair Turner argues that such a solution is technically possible, but it needs a genuinely independent central bank (Turner 2016). Budget deficit money financing is postulated in the Post-Keynesian Modern Money Theory (Tymoigne, Wray 2013). Yet, the proposed consolidation of fiscal authority and central bank is criticized even by the prominent representatives of this school of economic thought (Palley 2013).

problem was alleviated by the Bank of Japan's QE (quantitative easing) programs which facilitated a *de facto* reduction of public debt. There is a substantial body of academic literature on QE's role in reducing the interest burden of public debt service by stabilizing long-term interest rates. However, only a handful of publications highlight that when central banks purchase treasury bonds to keep them permanently⁶, it in fact amounts to a conversion of these bonds into zero coupon perpetuities bearing no burden for the government (Paris, Wyplosz 2014, Turner 2015, Corsetti et al. 2015).

CONCLUDING REMARKS

The way in which the central banks were depicted by the dominant economic theories concentrates on their actions in what is believed to be a predictable environment, which they face most of the time. Needless to say, each turmoil is far from standard situation. Therefore, established central banking theories can constitute a *de-facto* constraint or even a misleading guidance when these institutions are faced with a dramatically different business environment around the time of turmoil. This provides the explanation for mistakes of the central banks when they had taken decisions in accordance with what was perceived as best practice. Similarly, this is the reason why non-standard actions can be faced with heavy criticism and therefore it takes time for them to be implemented, as was illustrated by the ECBs' long belated launching of its QE.

This was clearly visible in the past. In the 1930s, the liquidationist approach gave the pretext for the lack of action by the Federal Reserve during several waves of banking crisis (Cogley 1999, De Long 1990). In the 2000s, the trust in stable inflation as being a sufficient precondition to a stable economy (Alesina et al. 2001) excused many central banks from taking a sufficiently decisive monetary policy tightening against the wave of unsustainable lending booms (Turner 2015). Similarly, due to the excessive trust in the new methods of measuring and managing risk, central banker, regulators and supervisors grossly underestimated the scale of the excessive risk taken by banks and other financial institutions (Bookstaber 2017; Gambacorta Shin 2016).

⁶ It is hard to imagine the Bank of Japan selling treasury bonds from its portfolio as this would cause a substantial rise in long-term interest rates deepening the chronic stagnation in the Japanese economy.

The structural changes in the economies always call for an extension of the central banks' research. One of the recent new phenomena, which can challenge the future role of central banking, is the persistent excess of savings in corporate sector resulting from the increasing role of investment in intangibles (Gruber, Kamin 2015), the fading labour bargaining position (European Parliament 2016) and the dominance of the maximizing shareholder value doctrine (Lazonick 2017).

The chronic excess of savings may necessitate (as has been the case in Japan) fiscal expansions to recycle those savings into the economy and thus preventing a prolonged stagnation (Blanchard, Summers 2017). The chronic excess of savings in the corporate sector can undermine financial stability if a substantial part of those savings remains to be invested in the shadow banks (Pozsar 2014). Despite certain regulatory improvements which followed the last turmoil, the shadow banks continue to be poorly supervised and substantially unregulated. Hence, by offering high (artificially leveraged) rates of return they are bound to continue attracting investors, despite the clear risks related to those institutions. Under such circumstances central banks will be forced to analyse not only the banking sector, but also the functioning of shadow banks and the sources of their financing.

REFERENCES

- Acharya V. V., Cooley T., Richardson M., Walter I., *Manufacturing Tail Risk: A Perspective on the Financial Crisis of 2007-2009*, Foundations and Trends in Finance, Vol. 4, No. 4, 2010.
- Alesina, A., Blanchard, O., Gali, J., Giavazzi, F., Uhlig, H., *Defining a Macroeconomic Framework for the Euro Area*, "Monitoring the European Central Bank", no. 3, CEPR, London 2001.
- Bean, Ch., *Globalisation and Inflation*, "Bank of England Quarterly Review", 2006 Q4.
- Blanchard, O. J., *The US Phillips Curve: Back to the 60s?*. Peterson Institute for International Economics Policy Brief, January 2017.
- Blanchard, O. J., Summers, L., *Rethinking Stabilization Policy. Back to the Future*. Peterson Institute for International Economics, October 2017.
- Blinder, S. A., *Monetary Policy Today: Sixteen Questions and about Twelve Answers*, CEPS Working Paper no. 129, 2006.
- Boermans, M. A., Moore B. J., *Locked-in and Sticky Textbooks: Mainstream Teaching of the Money Supply Process*, MPRA Paper, No. 14845, Munich 2008.
- Bookstaber, R., *The End of Theory: Financial Crises, the Failure of Economics, and the Sweep of Human Interactions*. Princeton University Press, Princeton 2017.
- Bordo, M. D., *Rules for a Lender of Last Resort: An Historical Perspective*, "Journal of Economic Dynamics and Control", vol. 49, 2014.

- Carpenter, S. B., Demiralp, S., *Money, Reserves, and the Transmission of Monetary Policy: Does the Money Multiplier Exist?*, “Finance and Economics Discussion Series”, no. 2010-41, Federal Reserve Board, Washington D. C., 2010.
- Cassel, G., *The Downfall of the Gold Standard*. Oxford University Press, London 1936.
- Cogley, T., *Monetary Policy and the Great Crash of 1929: A Bursting Bubble or Collapsing Fundamentals*, FRBSF Economic Letter, March 26, 1999.
- Copeland, A., Martin, A., Walker M., *Repo Runs: Evidence from Tri-Party Repo Market*, Federal Bank of New York Staff Reports, no. 506, 2011.
- Corsetti, G, Feld, L. P., Lane, P., Reichlin, L., Rey, H., Vayanos, D, Weder di Mauro, B., *A New Start for the Eurozone: Dealing with Debt*. CEPR Press, London 2015.
- Cukierman, A., *Money growth and inflation: policy lessons from a comparison of the US since 2008 with hyperinflation in Germany in the 1920s*, “Economic letters”, no. 154, 2017.
- DeLong, B. J., *Liquidation cycles: Old-Fashioned Real Business Cycles Theory and The Great Depression*, NBER Working Paper no. 3546,,1990.
- European Parliament, *Prekarious Employment in Europe*, Study for the EMPL Committee, p. 33, 2016.
- Evans, P., Iftekhar, H., Tallman, E. W., *Monetary Explanations of the Great Depression: A Selective Survey of Empirical Evidence*, Federal Reserve Bank of Atlanta Economic Review, Third Quarter, 2004.
- Federal Reserve Bank of San Francisco, *A Minsky Meltdown: Lessons for Central Bankers*, Economic Letter, 1 May, 2009.
- Friedman, M., Schwartz, J. A., *A Monetary History of the United States, 1867-1960*. Princeton University Press, Princeton 1963.
- Friedman, M., *A Monetary and Fiscal Framework for Economic Stability*, “American Economic Review”, vol. 38, 1948.
- Gambacorta, L., Shin, H. S., *Why bank capital matters for monetary policy*, BIS Working Paper, no. 558, 2016.
- Goodhart, A. E. Ch, *What Should Central Banks Do? What Should Be Their Macroeconomic Objectives and Operations?*, “The Economic Journal”, vol. 104, no. 427, 1994.
- Goodhart, C. A. E., *A Steadfast Refusal to Face Facts*, “Economica”, vol. 76, 2009.
- Gorton, G. B., Metrick, A., *Securitized Banking and the Run on Repo*, NBER Working Paper, no. 15223, 2009.
- Gruber, J. W., Kamin, S. B., *The Corporate Saving Glut in the Aftermath of the Global Financial Crisis*, Board of Governors of the Federal Reserve System International Finance Discussion Papers no. 1150, 2015.
- Hoenig, T., *A Turning Point: Defining the Financial Structure*, 22nd Annual Hyman Minsky Conference, Levy Institute of Bard College, 2013.
- Holmes, A., *Operational Constraints on the Stabilization of Money Supply Growth*, in: *Controlling Monetary Aggregates*. Federal Reserve Bank of Boston, Boston 1969.
- Honohan, P., *Resolving Ireland’s Banking Crisis*, Paper for the UCD-Dublin Economic Workshop Conference: *Responding to the Crisis*, Dublin 2009.

- Jakab, Z., Kumhof, M., *Banks are not intermediaries of loanable funds – and why this matters*, Bank of England Working Paper, no. 529, 2015.
- Keen, S., *Post Keynesian Theories of Crisis*, “American Journal of Economics and Sociology”, vol. 2, no. 3, 2015.
- King, M., *The End of Alchemy. Money, Banking and the Future of the Global Economy*. Little, Brown, London 2016.
- Koo, R., *The Holy Grail of Macroeconomics: Lessons from Japan’s Great Recession*. Wiley, 2008.
- Koo, R., *Balance sheet recession as the ‘other half’ of macroeconomics*, “European Journal of Economics and Economic Policies”, vol. 10, no. 2, pp. 136-157, 2013.
- Koo, R., *The other half of macroeconomics and the three stages of economic development*, “Real-World Economics Review”, issue 75, 2016.
- Kydland, F., Prescott, E. C., *Rules Rather than Discretion: the Inconsistency of Optimal Plans*, “The Journal of Political Economy”, no. 85, 1977.
- Lazonick, W., *The Functions of the Stock Market and the Fallacies of Shareholder Value*, Institute for New Economic Thinking. Working Paper, no. 58, 2017.
- Lucas, R. E., *Expectations and Neutrality of Money*, “Journal of Economic Theory”, vol. 4, no. 2, 1972.
- Mankiw, N. G., *The Macroeconomist as Scientist and Engineer*, “Journal of Economic Perspectives”, vol. 20(4), 2006.
- McCulley, P., *The Shadow Banking System and Hyman Minsky’s Economic Journey*, “The Research Foundation of CFA Institute”, 2009.
- McLeay, M., Radia, A., Thomas, R., *Money creation in the modern economy*, “Bank of England Quarterly Bulletin”, Q1, 2014.
- Minsky, H., *Stabilizing an Unstable Economy*. Yale University Press, New Haven 1986.
- Mishkin, F. S., *Does Anticipated Monetary Policy Matter? An Econometric Investigation*, NBER Working Paper, no. 506, 1980.
- Moore, B., *Horizontalists and Verticalists: The Macroeconomics of Credit and Money*. Cambridge University Press, Cambridge 1988.
- Morris, S., Shin, H. S., *Financial Regulation in a Systemic Context*, “Brooking Papers on Economic Activity”, 2008.
- Palley, T. I., *Money, fiscal policy, and interest rates: a critique of Modern Monetary Theory*, IMK Working Paper, no. 109, 2013.
- Paris, P., Wyplosz, Ch., *The PADRE Plan: Politically Acceptable Debt Restructuring in the Eurozone*, Geneva Reports on the World Economy, Special Report 3, CEPR Press, 2014.
- Pozsar, Z., *Shadow Banking: Money View*, Office of Financial Research Working Paper, no. 14-04, 2014.
- Shin, H. S., *Adapting Macroprudential Policy to Global Liquidity Conditions*, Central Bank of Chile Annual Conference, Santiago de Chile, 17-18 November 2011.
- Simons, H. C., *Rules vs. Authorities in Monetary Policy*, “Journal of Political Economy”, vol. XLIV, 1936.
- Singh, M., *Velocity of Pledged Collateral: Analysis and Implications*, IMF Working Paper, no. 256, 2011.

- Singh, M., Aitken, J., *The (sizable) Role of Re-hypothecation in Shadow Banking System*, IMF Working Paper, no. 172, 2010.
- Singh, M., Stella, P., *The (other) deleveraging: what economists need to know about the modern money creation process*, voxeu.org, 2012a.
- Singh, M., Stella, P., *Money and Collateral*, IMF Working Paper, 2012b.
- Sławiński, A., *The role of the ECB's QE in alleviating the Eurozone debt crisis*, WUE, no. 428, 2016.
- Sławiński, A., *Shielding money creation from severe banking crises: how useful are the proposals offered by the alternative reform plans?*, "Bank i Kredyt", vol. 46, no. 3, pp. 191-206, 2015.
- Tobin, J., *Commercial Banks as Creators of Money*, "Cowles Foundation Discussion Papers", no. 159, 1963.
- T Turner, A., *Central Banking After the Crisis: No Return to Past Certainties*, "Business Economics", vol. 50, no. 3, 2015.
- Turner, A., *Between Debt and the Devil. Money, Credit, and Fixing Global Finance*. Princeton University Press, Princeton 2016.
- Tymoigne, E., Wray, L. R., *Modern Money Theory: A Reply to Critics*, Levy Economics Institute Working Paper, no. 778, 2013
- Wheelock, D. C., *Monetary Policy in the Great Recession: What the Fed Did and Why?*, Federal Reserve Bank of St. Louis Review, vol. 74, no. 2, 1992.
- Wilmarth, A. E., *The Dark Side of Universal Banking: Financial Conglomerates and the Origins of the Subprime Financial Crisis*, "Connecticut Law Review", vol. 41, no. 4, 2009.

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