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Unconventional monetary policy and negative interest rates: a Post-Keynesian perspective on the liquidity trap and euthanasia of the rentier*

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This article discusses 'unconventional' monetary policy after the 2008 crisis. The focus is the original theoretical basis for such policy and possible Keynesian readings and criticisms. Drawing inspiration mainly from Keynes (1930; 1936) and Minsky (1975), the paper seeks to explain why ultra-low/negative interest rates neither caused 'rentiers' to die, nor achieved full employment. The main hypothesis goes in the direction pointed to by Keynes: the problem is the low marginal efficiency of capital, the liquidity trap, and the lack of active government fiscal policy, which should be used in conjunction with monetary policy that maintains low long-term interest rates in order to spur investment. Monetary policy and very low/negative interest rates seem insufficient to overcome low growth. They are also incapable, at least in the short term, of promoting euthanasia of the rentiers as current monetary policy allows financial institutions to benefit from the capital gains it spurs.

Keywords: *monetary policy, negative interest rates, liquidity trap, euthanasia of the rentier*

JEL codes: *E40, E43, E58*

1 INTRODUCTION

In the ten years since the first effects of the 2007/2008 financial crisis, policymakers in developed countries have tried several unconventional approaches[1] to monetary policy (MP) to deal with the lack of economic growth: quantitative easing, large-scale asset

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1. According to Mishkin (2012), unconventional tools are 'non-interest rate tools.'

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purchases, and ultra-low and negative nominal interest rates, among others. Negative nominal interest rates (NNIR), particularly, were previously inconceivable in economic textbooks and are now a reality for several countries. John Maynard Keynes, in chapter 24 of *The General Theory* (GT) from 1936, argued that a low-interest-rate policy in order to achieve full employment would eventually cause the 'euthanasia of the rentier.' Keynes in the GT and other previous works also argued that, in a crisis, an economy could be in a state of 'liquidity trap.'

This article intends to critically discuss, based primarily on J.M. Keynes and Hyman Minsky, the MP put forth after the crisis. Our main argument is that the MP strategies were not accompanied by ambitious fiscal policy, which Keynes and Minsky would have argued for. Since policymakers and economic agents are still believers in old mainstream economic models that advocate the use of short-term interest rates to deal with low inflation, agents predict that those rates will increase in the future and speculate with it, accumulating capital gains via asset inflation that is generated by the MP approach to deal with the crisis.

The remainder of the article is divided into three parts, following this introduction. In Section 2, we briefly review mainstream economic theory since the crisis, and how it has incorporated some 'new' concepts, like negative interest rates and the liquidity trap. In Section 3, we discuss the MP measures adopted in the US, Japan, and the eurozone. In Section 4, we use J.M. Keynes's and Hyman Minsky's theoretical apparatuses to make a critical assessment of unconventional MPs after the crisis, discussing the Post-Keynesian concept of the liquidity trap and low marginal efficiency of capital, and how to overcome such situations. In this section, we also analyse the possible reasons why, after many years of very low, zero, and negative interest rates, rentiers in the financial sector are still 'alive and well,' contrary to Keynes's prediction that very low interest rates, sustained for long enough, would produce their euthanasia. Section 5 offers some concluding remarks.

2 THE NEW CONSENSUS FRAMEWORK AND UNCONVENTIONAL MP

During the 1990s, the school of economic thought known as the New Consensus in Macroeconomics (NCM) became highly influential. Its many adherents in academia and central banks (CBs) proclaimed that the school institutionalized the sense of 'good' MP and imposed discipline on CBs (Woodford 2003). Within its consensual framework,[2] the main objective of MP was controlling inflation (the inflation targeting (IT) regime) using an interest-rate policy rule (the Taylor rule), in an inter-temporal general equilibrium macroeconomic analysis (Arestis and Sawyer 2008). According to Blanchard (1997), the NCM is based on two central propositions: in the short run, economic activity is driven by aggregate demand; and over time, the economy moves towards a steady-state growth path.

This theoretical framework rests on a few core principles that include: (i) A natural rate of unemployment given by the economy's level of productivity and savings. Under the assumption of rational expectations, there is a dynamic stochastic general equilibrium (DSGE) where MP is neutral in the long run and does not affect real variables. (ii) Inflation is a monetary phenomenon that originates from demand-driven

2. The NCM has its core foundations on a combination of Monetarist, New-Classical, Real Business Cycle, and New Keynesian theoretical, empirical and methodological elements (de Paula and Saraiva 2016).

short-run deviations from potential output. (iii) MP decisions are then better set as rules, in which the short-run nominal interest rate is adjusted in reaction to economic events in the face of an explicit objective: inflation (Arestis and Sawyer 2008; De Paula and Saraiva 2016; Mishkin 2012; Romer 2000; Taylor 2010).

The 2007–2009 disturbances have exposed both the dangers associated with imbalances in the financial sector and the limits of MP, stimulating a broad debate on some of NCM's core principles (Blanchard et al. 2010). Much of the discussion carried out by the NCM theorists after the crisis focuses on the challenge of building a better guide for macroeconomic policy, highlighting that MP should be based on more targets and more instruments (Bernanke 2010; Joyce et al. 2012; Woodford 2012). In practice, during and after the crisis, the conventional MP instruments used during normal times – especially the short-term interest rate – had to be complemented by unconventional MPs.

The possibility of having non-conventional tools to deal with financial disruptions was partly discussed within the NCM theoretical framework before the crisis. In the 1990s, the bursting of the Japanese asset bubble, followed by money-market rates below 1 percent for many years, stimulated debate about the possibility of a *liquidity trap* (LT),[3] a situation when, for the NCM, the nominal interest rate reaches its lower limit: the zero lower bound (ZLB) (Krugman et al. 1998).

Overall, the NCM incorporates Hicks's conception of the LT – in which money and bonds are considered perfect substitutes. However, the NCM view of the LT goes beyond that, arguing that there is a mismatch between the real interest rate and the natural one. The idea is that a negative shock, such as a crisis, pushes the natural interest rate below zero. That shifts NCM propositions to focus on the real interest rate[4] through impacts over inflation expectations (Buiter and Panigirtzoglou 1999; Krugman et al. 1998; Svensson 2006). Adopting an NNIR (although theoretically impossible for the NCM before the crisis) would align the nominal interest rate and the natural interest rate, allowing the economy to revert to its long-run steady-state growth path.

Although the NCM has incorporated the use of unconventional MP tools into its framework, in 'normal' times MP should continue to follow the same old rules, using the short-term interest rates mainly to control inflation. The core principles of the NCM remain and the use of other instruments, especially NNIR, should be confined only to exceptional times (Mishkin 2012).[5]

3 MP AFTER THE CRISIS: THE UNITED STATES, JAPAN, AND THE EUROZONE

The set of MP instruments that were used during the crisis involved: (i) rescuing banks and non-banks by providing liquidity through the traditional instrument of the discount

3. The definition of the liquidity trap for J. M. Keynes will be discussed in Section 4.
4. $r = i - \pi^e$, where r = real interest rate, i = nominal interest rate, and π^e = inflation expectation.
5. There are several studies in the mainstream field on how to set MP with a ZLB. However, there is not a lot of empirical evidence as to how unconventional MPs affect expectations, according to Mishkin (2012, p. 25): 'there is strong theoretical support for the management of expectations to stimulate spending when the policy rate hits the zero lower bound because a commitment to keep short term interest rates low for a substantial period of time helps lower long-term interest rates and also raises inflation expectations, thereby reducing the real interest rate (Eggertsson and Woodford, 2003 and 2004 and Woodford, 2003). Yet, the empirical evidence for how effective management of expectations was during this episode is not yet available.'

window; (ii) rescuing banks by injecting capital;[6] (iii) making loans through a series of new facilities, both to banks and non-banks; (iv) asset purchases, in the so-called quantitative easing (QE)/large-scale asset purchase (LSAP) programs;[7] (v) forward guidance;[8] (vi) lowering short-term interest rates to very low levels; (vii) lowering short-term interest rates to zero, which is sometimes referred to as the zero lower bound (ZLB); (viii) nominal negative short-term interest rates; and (ix) controlling long-term interest rates through manipulation of the yield curve. Some of these instruments may be considered 'unconventional' MP, while others may fall into the category of conventional but 'emergency' MP. Table 1 summarizes the nature of the instrument and the country that adopted it, focusing on three special cases: the US, Japan, and the eurozone, since they are the main cases of unconventional MP in the 2000s. Measures taken by these three CBs have no precedent and shaped the post-crisis economic environment in many ways. The next sub-sections analyse those cases.

Although we are classifying some MP actions as 'unconventional,' the fact that they have been in use for almost ten years in the case of the US and the eurozone, and since the end of the 1990s in Japan, has made it more difficult to distinguish between conventional and non-conventional MP. As put by Santor and Suchanek (2016, p. 29): 'The unconventional is increasingly becoming conventional, and UMPs [unconventional monetary policies] have established themselves as part of any modern central bank's tool kit.'

3.1 The United States

With the collapse of the financial system in 2008 and its consequences for the US real economy, the Federal Reserve (Fed)[9] started to implement a series of non-conventional MP measures. As argued by Mehrling (2011), the Fed transferred whole markets to its own balance sheet. In the beginning, conventional tools like the discount window were used to cut the short-term interest rate (federal funds rate). In December 2008, however, the Fed hit the ZLB. Starting in March 2008 with the failure of Bear Stearns, and then more aggressively after September with the failure of Lehman Brothers, the Fed started to intervene in financial markets to re-establish liquidity. Using Section 13(3) from its governing statute, the Fed created a series of new facilities to lend money to the financial sector and 'save' specific markets. When the Fed realized that the crisis would be intense and long-lasting, it started LSAP programs, buying an enormous quantity of private and public bonds. The Fed sought to (i) improve the functioning of certain markets (especially the real estate one) and the balance sheet of financial institutions; (ii) lower long-term interest rates; (iii) make investors migrate to other assets, since bonds purchased by the Fed were 'scarcer'; and (iv) influence future expectations on short-term interest rates, promoting 'forward guidance.'

6. Like the Trouble Asset Relief Program (TARP), created in 2008 by the US Government – which was not MP *per se*, but $700 billion from the US Treasury – it can then be categorized as fiscal policy.
7. The purchase of bonds has always been inside the MP apparatus of CBs. They usually do it through open-market operations in order to keep the short-term interest rate on a certain target. The difference regarding LSAP/QE is both the scale and the assets purchased.
8. A central bank's communication about the future path of MP, especially short-term interest rates.
9. Ben Bernanke, who was president of the Fed from 2006 until the end of 2013, is an economist who specializes in the Japanese experience with deflation and low-interest-rate MP, and in the 1930s Great Depression. In the eyes of many experts, he was the ideal person to be in charge of the Fed during that turbulent period.

The first announcement of asset purchases was in November 2008 (QE1), for a total of US$1.75 trillion in mortgage-backed securities (MBSs), agency and government debt. In November 2010 the Fed launched another QE round (QE2), purchasing an additional US$600 billion in long-term Treasuries. The so-called 'Operation Twist,' which began in September 2011 and finished in December 2012, involved the purchase of US$667 billion in long-term Treasuries while simultaneously selling short-term ones. The last QE round (QE3) began in September 2012. Its goal was not to restore the functioning of financial markets, but rather to increase inflation and promote growth. The Fed first announced that it would buy bonds (MBSs and long-term Treasuries) at a pace of US $40 billion per month until the conditions of the labor market improved 'substantially.' In December 2012, this amount was increased to US$85 billion per month. In December 2013, the Fed finally announced that it would decrease the purchases by US$10 billion at each Federal Open Market Committee (FOMC) meeting ('tapering'). The program ended on 29 October 2014.

Due to these non-conventional measures, the monetary base in the US increased more than four times, from approximately US$837 billion in August 2007 to more than US$4 trillion in 2015. In June 2017, it was still around US$3.7 trillion, most of it in the form of bank reserves (US$2.2 trillion).

3.2 Japan

For the US, the use of unconventional MP can be seen as a disruption. Japan, however, had been 'used to it' since the end of the 1990s. The Bank of Japan (BoJ) announced a zero-interest-rate (ZIR) policy for the first time in April 1999. Beyond setting a ZIR, it committed to maintain this policy until deflationary forces threatening the Japanese economy dissipated. Nevertheless, the bursting of the dot-com bubble in 2001 forced the BoJ to adopt QE policy. That policy lasted until March 2006, when the BoJ announced it would end it. However, the cessation did not last long. By the end of 2008, the BoJ had announced a new round of unconventional MP in response to the crisis. According to the BoJ (2010), it would lower the policy rate, implementing measures to ensure stability in financial markets and to ease corporate financing. In addition, several measures were implemented to avoid a financial-market collapse, such as an aggressive purchase of commercial papers and corporate bonds, increasing the BoJ's balance sheet.

In 2010, the BoJ replaced QE with a new regime called comprehensive monetary easing (CME) that intended to keep the policy rate close to zero, aligned with another aggressive asset purchase program. The program consisted of purchasing Japanese government bonds (JGBs), commercial papers, corporate bonds, and exchange-traded funds (ETFs), among others. In 2013, the BoJ replaced CME with a 'quantitative and qualitative easing' (QQE) policy, which intended to 'double the monetary base and the amounts outstanding of Japanese government bonds (JGBs) as well as exchange-traded funds (ETFs) in two years, and more than double the average remaining maturity of JGB purchases' (BoJ 2013). Although the QE, CME, and QQE policies do not differ much from each other, QQE can be considered a turning point when it comes to the BoJ's efforts to reverse the effects of the crisis in Japan. In 2012, the BoJ also introduced a 'Loan Support Program' (classified in Table 1 as 'loans through new facilities').[10]

10. According to the BoJ (2012), this is 'a program established on the Bank's balance sheet to provide loans made against pooled collateral with the aim of supporting private financial institutions' efforts in strengthening the foundations for economic growth and stimulating bank lending.'

Table 1 Instruments to deal with the crisis and adopting country

Policy to deal with crisis	Nature			Adopted by		
	Unconventional MP	Conventional 'emergency' MP	Fiscal policy	US	Japan	Eurozone
LSAP/QE	✓	–	–	✓	✓	✓
Very low interest rates	–	✓	–	✓	✓	✓
Zero interest rates	✓	–	–	✓	✓	✓
Negative interest rates	✓	–	–	–	✓	✓
Discount window operations	–	✓	–	✓	✓	✓
Loans through new facilities	✓	–	–	✓	✓	✓
Forward guidance	✓	✓	–	✓	✓	✓
Capital injection	–	–	✓	✓	–	–
Yield-curve control	✓	–	–	–	✓	–

As for interest rates, QQE was successful in lowering long-term rates. However, inflation expectations – one of the BoJ's goals – did not respond significantly. The BoJ then launched another aggressive program in early 2016: 'quantitative and qualitative monetary easing with a negative [nominal] interest rate' (NNIR). The NNIR policy was able to bring long-term interest rates to the negative field, by pushing JGB prices up and consequently propelling yields down. However, by the end of 2016, the BoJ faced upward pressure on interest rates – especially as a result of the Fed reversing its QE and the 'Trump effect.'

In order to avoid failure of its NNIR policy, the BoJ made some changes to its MP strategy. To prevent a hike in the long-term interest rate, the BoJ announced it would pursue a 0 percent target, launching a yield-curve control program. This program, aligned with an NNIR, has no precedent in history. In 1936, however, Keynes had already considered the possibility of having a more direct control of the yield curve:

> The monetary authority often tends in practice to concentrate upon short-term debts and to leave the price of long-term debts to be influenced by *belated and imperfect* reactions from the price of short-term debts; – *though here again there is no reason why they need to do so.* (Keynes 1936, p. 206, emphases added)

One of the effects of the BoJ's initial QE programs at the beginning of the 2000s was a huge increase in its balance sheet. However, since most of the money created was in the form of banks' excess reserves, the money supply did not increase dramatically. After the 2008 crisis, through QE, CME, and QQE, the BoJ started to focus its purchases on a mix of loans and securities in order to expand the money supply and improve the functioning of particular segments of credit markets (Klyuev et al. 2009; Thornton, 2010).

3.3 The eurozone

Compared to its international peers, the European Central Bank (ECB) was slower in easing its MP, and it abstained from LSAP until 2015. As financial stress increased, the ECB extended the maturities of loans offered to banks while easing its collateral requirements. In May 2009, it established special facilities, which served as an important funding market for banks. At that time, it lowered its main refinancing rate to 1 percent (Bibow 2016).

The ECB was far less forthcoming in supporting public debt through QE programs. In May 2010, it launched the 'Securities Markets Program' (SMP) to handle the malfunctioning of some market segments and to guarantee an appropriate transmission of MP. The initial purchases focused on Greek government bonds, and as the debt crisis spread to other countries in the zone, the programs added public debts issued by Ireland, Portugal, Italy, and Spain. These operations were first fully submitted to sterilization to counter suspicions of 'monetary financing' (ibid.). Despite its ample support, market stress and financial fragmentation continued to escalate until August 2012, when the conditional Outright Monetary Transactions (OMTs) were announced to cope with the redenomination risk.[11]

By mid 2014, the decrease in oil prices added further disinflationary pressures and, since interest rates were then close to zero, the ECB's ability to provide monetary stimulus using conventional policy measures was constrained (ECB 2017). The ECB decided to terminate the sterilization of the SMPs' liquidity effect, effectively marking the start of 'public debt monetization,' purely for MP purposes. The instruments used since June 2014 have included targeted longer-term refinancing operations (TLTROs – classified in Table 1 as 'loans through new facilities'); lowering the deposit facility rate into negative territory (an NNIR policy); and an LSAP (called expanded asset purchase program – APP) aiming at a variety of investment-grade private- and public-sector securities. This set of measures has been reinforced by forward guidance on the key ECB interest rates (ECB 2018; Reza et al. 2015).

The MP strategies adopted by the Fed, BoJ, and ECB to deal with the crisis and its effects have NCM as their theoretical basis, especially on how to do MP in an LT situation. The reformulated version of NCM now specifically advocates that NNIR will help economies in a crisis. However, when dealing with a crisis, the Keynesian 'solution' is substantially different. Additionally, from a Keynesian perspective, NNIR and unconventional MP could be aligned with the LT and with the euthanasia of the rentier in the terms discussed by Keynes and Post-Keynesians like Hyman Minsky. In the next section, we discuss MP today through Post-Keynesian lenses, discussing the reasons why recent policies have not been efficient at promoting and sustaining economic growth.

4 THE LIQUIDITY TRAP, NEGATIVE INTEREST RATES, EUTHANASIA OF THE RENTIER, AND KEYNESIAN ALTERNATIVES FOR OVERCOMING STAGNATION

4.1 The liquidity trap and marginal efficiency of capital for Keynes and Minsky

In the interim between the *Treatise on Money* and *The General Theory* (GT), Keynes developed two fundamental concepts that would revolutionize monetary theory: liquidity preference (LP) and marginal efficiency of capital (MEC) (Kregel 2014, p. 2). LP is associated with uncertainty about the future: if agents are pessimistic about the future, migrating from fewer to more liquid assets serves to 'soothe their worries.' The MEC, a central aspect of the determination of productive investment, is centered on expectations of future demand.

Keynes's new directions on economic theory would be filled with 'lost details and conspicuous absences,' according to Macedo e Silva (2008), starting with the different

11. According to de Santis (2015, p. 1), redenomination risk is the risk 'that a euro asset will be redenominated into a devalued legacy currency.'

concepts regarding the interest rate. At first (chapters 13 to 15 of the GT), Keynes theorizes about the interest rate as a price that rewards the holder of a bond from letting go of the liquidity of money. In chapter 17, his theory is improved with the functioning of a monetary economy of production centered on agents' portfolio choice. All assets contain four attributes: the generation of income; changes in their market values; their carrying costs; and their liquidity premium. Hence, any portfolio allocation considers these attributes for decisionmaking. Nevertheless, in Keynes's theory, when an economic agent is deciding to allocate his/her stock of wealth among several assets, 'there is a conspicuous absence: of financial institutions and credit' (Macedo e Silva 2008, p. 335). According to Macedo e Silva (ibid., p. 336) the 'simplifying and equilibristic procedures' of the GT would require the exclusion of financial institutions, allowing an analysis of the portfolio allocation decision with a given money supply.

Even though Keynes simplified the essential elements for understanding a monetary economy of production, the concept of LP was already set as a central aspect of the functioning of business cycles. Under radical uncertainty, a condition that is always present in a capitalist economy, diminished confidence in the future causes the liquidity attribute of money to stand out in comparison to its other attributes. That is the core of the *liquidity trap* as proposed by Keynes, in contrast to the concept of the LT analysed by the NCM. According to Keynes, an economy would find itself in this situation when:

> There is the possibility, for reasons discussed above, that, after the rate of interest has fallen to a certain level, liquidity preference may become virtually absolute in the sense that almost everyone prefers cash to holding a debt which yields so low a rate of interest. (Keynes 1936, p. 207)

First, Keynes makes it clear that he is referring to the long-term interest rate – the interest rate on bonds. In addition, he is explicit in stating that the key issue for an LT situation is not so much the level of the interest rate, but 'the degree of its divergence from what is considered a fairly safe level' (ibid., p. 201). This degree of divergence would increase the demand for money by two channels. First, if the interest rate was reduced, but the 'safe' rate was not, the perception of illiquidity risk[12] would surge, increasing the demand for money and reducing the demand for bonds. Second, Keynes points out that the lower the interest rate, the lower the insurance premium to offset the risk of capital loss, defined as 'the difference between the squares of the old rate of interest and the new' (ibid., p. 202). This question, known in the financial literature as the duration[13] of a bond, is decisive for understanding the concept of the LT in Keynes since it points to the centrality of the pricing of wealth stocks as the cause of the LT scenario.[14]

12. Illiquidity risk refers to the risk that, even though the asset is liquid in the present, in the future the agent might not be able to sell it without incurring in losses – that is, the asset might lose degrees of liquidity.
13. The example proposed by Keynes indicates that a long-term interest rate of 4 percent per year would require that it does not increase more than 0.16 percent per year. Considering lower rates, this variation would have to be much lower. At a rate of 2 percent per year, it would only compensate to keep illiquid assets if it increased only 0.04 percent; for any amount above that, it would be better to retain liquidity.
14. The modified duration calculation, which comprises the rule of the square of the interest rate quoted by Keynes, explains the inverse relation between the capital already invested and the return coupon. In parallel with a higher coupon yield, the increase in the interest rate promotes a devaluation in the bond price. Therefore, the lower the interest rate, the longer the duration and the longer it takes to recover capital losses through the reinvestment of income (Kregel 1998).

According to Kregel (2000, p. 6), the LT would depend on expectations on the price of bonds in the future, based on recent interest-rate volatility. For the holder of a fixed-rate security, recovering the losses in value due to small increases in interest would take several years, even with the reinvestment of interest income. Even though this situation is more likely to occur at low interest rates, nothing prevents an LT from happening at higher rates. As highlighted by Kregel (1998, p. 130, emphasis added):

> Thus, the lower the rate of interest, the higher the bond's duration and the longer it takes to recover the fall in capital values from the increased reinvestment earnings … . However, it should be clear that *this does not rule out the existence of a liquidity trap at higher rates*.

Therefore, although an LT is much more feasible at low interest rates because of higher risks of capital loss, there is nothing preventing it from occurring at higher rates. Both the discrepancy in relation to the rate considered 'safe' and the recent volatility of the interest rate influence the degree of LP.

The MEC, a key concept in Keynes's theory, links investment decisions and interest rates via two channels (Keynes 1936). The first is the *supply price* of investment, which Keynes called the 'replacement cost.' This price tends to increase during the upward phase of the investment cycle. The second is the *demand price*: when an entrepreneur acquires a capital asset, s/he has the expectation of positive yields by selling its output in the future. Those expectations are related to the cost of the production process and to aggregate demand in the future. The demand price would be, for Keynes, the prospective yields discounted by the interest rate (cost of capital). While the individual capitalist has some control over the costs, s/he has none over yields as they depend on investment of the economy as a whole (that will determine aggregate demand) – that is, it depends on investment decisions of other capitalists. The MEC would then be the ratio between the demand price and supply price: if expectations of aggregate demand in the future are pessimistic, the MEC will decrease and the level of investment in the economy will fall, making it harder for the economy to recover from a crisis.

By introducing financial institutions and the financing of investment, Minsky (1975) put banks and credit at the core of his theory. Whereas Keynes's MEC focuses on the asset side of balance sheets, Minsky's theory incorporates the liability side. Investment decisions always have to be financed somehow, and Minsky incorporates two aspects of uncertainty through his view of investment financing. He does this first by setting up payment obligations before the maturity of the investment, even when the expected returns are not yet realized; and second via the fact that the payment of these obligations is in competition with other financial assets (Dymski 1997). Consequently, factors that impact the financial market affect both capitalists' decisions and the propensity of financiers to grant resources. Financial markets and productive investment are much more correlated, impacting both the boom period and the crisis.

One aspect of the Minskyan theory that deserves prominence in respect to the LT is his two-price theory. According to him, Keynes was stuck in 'a standard interest-rate terminology' (Minsky 1975, p. 98) – which would possibly be an important factor for misinterpretations of Keynes's theory. Thus, Minsky proposes to replace the analysis of the MEC with the demand price of capital assets (P_k)[15] and the price of capital

15. $P_k = K(M, q, c^* - c)$, where M is the money supply, q are the expected returns, c^* are securities issued from indebtedness, and c is the level of indebtedness. Michl (2010) proposes another form of formalization: $P_K = \sum(\delta Q)$, where $= 1/(1+i+n)^t$, i being the monetary interest rate (market) and n the risk premium (uncertainty).

supply (P_i). Although P_k is similar to the demand price of the MEC, the discount rate on expected income is more explicit in Minsky's theory.[16]

Although the theoretical constructions of Keynes and Minsky do not differ so much for normal times,[17] the analysis of the LT through P_k and with financial markets is different in a crisis. In this situation, the liquidity attribute of money reaches extremely high levels, while the internal liquidity of other assets falls abruptly. To get funds through the sale of assets becomes more difficult, while investments made in the past do not have their expected returns fulfilled. Since payments on debt incurred in the past still have to be made, '[t]he desired improvement in balance sheets will not be realized, and a recursive debt-income deflationary process could be triggered' (Minsky 1975, p. 113). In this situation, P_k drops quickly, and firms seek deleverage. If P_k falls below the P_i, there is an LT situation. According to Minsky, 'even if the interest rate on financial assets continues to fall as the supply of money is increased, *the capitalization rate applied to investment assets may not rise by enough to induce investment*' (ibid., p. 113, emphasis added).

Since the capitalization rate is downwardly sticky, even if the CB decides to reduce the nominal interest rate, it is incapable of inducing investment. The monetary authority simply cannot influence the discount rate used by investors that are 'poisoned' by an extreme degree of uncertainty. Again, this view of the LT is not necessarily correlated with the ZLB (although the LT is more likely to happen with low rates) since the core issue would be the expectation of agents and their LP, and not the level of the interest rate itself.[18]

4.2 How to overcome the liquidity trap: Keynes and the Post-Keynesians

In the *Treatise of Money*, Keynes had several monetary proposals to deal with the lack of aggregate demand and the LT, such as purchase of longer-term assets through open-market operations (Akram 2016). However, Kregel (2014, p. 4) suggests Keynes would have revised the way such a policy was implemented:

> Keynes would have gone about the implementation of QE in a much different way. Instead of announcing a given amount of purchases of particular securities and a target for the size of the central bank's balance sheet, he would have set the bid and ask rate and let the market decide the amounts it wanted to transact.

In this sense, the widespread idea (thanks to the IS–LM theory) that that Keynesian theory has as its only proposal the fiscal policy for overcoming the LT is mistaken, since MP does play an essential role. From a Keynesian and Minskyan point of view, CBs would need not only to keep short-term interest rates at low levels but also to act directly to affect the yield curve and long-term rates. CBs would have to

16. 'First of all, the q's are not submerged, as in the alternative approach; second, the capitalization factor, which can have a varying ratio to the market rate of interest on secure loans because of the different values placed upon liquidity, is explicitly considered' (Minsky 1975, p. 99).
17. 'A stimulative MP will lower the monetary rate of interest. In Keynes's account, this will make it economic to invest in more projects that support a lower marginal efficiency of capital. In Minsky's account, the lower monetary rate will increase the discounted value of future yields and make economic the purchase of more capital assets of given supply price' (Michl 2010, p. 9).
18. 'MP will quite possibly be rendered impotent even before it reaches the ZLB, for the inability to affect the interest rate is not the differentia specifica of a Minskian liquidity trap' (Michl 2010, p. 10).

take measures beyond cuts in interest rates, making efforts to reduce their volatility, reducing uncertainty. Therefore, 'targeting the yield curve and reducing interest rate volatility is a prerequisite for overcoming a liquidity trap' (Akram 2016, p. 29).

If we look at the recent experience of the Fed, BoJ, and ECB, Wray (2016) argues that they acted as lenders of last resort or 'Big Banks,' the famous Minsky concept (1986):

> The central bank can try to constrain lending in a boom (although Minsky was skeptical since profit-seeking banks innovate around constraints – the creation of the fed funds market is an example of one of those innovations). But more importantly, the central bank can act as lender of last resort when a financial crisis hits. The central bank should lend reserves to any banks that need them to meet withdrawals. Indeed, Minsky advocated extending discount window lending to a broad range of financial institutions, including 'nonbank banks' (now called shadow banks). This lending prevents a run on financial institutions, which reduces pressure on banks to engage in fire sales of assets to meet withdrawals. (Wray 2016, pp. 33–34)

Thus, of the policies adopted by the three CBs during the crisis (Table 1), Keynes and Minsky would have probably agreed with most of them, albeit in different formats. Keynes would have probably argued for a more direct control of the long-term interest rate (as the BoJ did), and Minsky would likely have defended that the CBs reduce volatility on interest rates to smooth the financial cycle. Minsky would also have agreed with the large use of the discount window for all financial institutions in need of liquidity.

In chapter 23 of the GT, Keynes presents the ideas of Silvio Gessel, a German merchant living in Buenos Aires who had studied monetary phenomena. Gessel argued that, in order to reduce the monetary interest rate to zero or even to below zero to increase the growth of real capital, some kind of carrying cost on money was needed, which he envisaged via 'stamping' money. Keynes himself stated that this idea was 'sound.' But is it possible to overcome the LT in Keynesian terms through NNIR? Keynes and the Post-Keynesians (Palley 2016 would be one exception) do not discuss at length the real possibilities of implementing NNIR. Kregel (2014, p. 4) presents this hypothesis marginally, through Keynes's perception of the Silvio Gessel proposal:

> Keynes's understanding of liquidity preference provides an alternative explanation of the role of negative interest rates and of his fascination with measures such as Silvio Gesell's stamped money. … In Keynes's approach, all that would be required to offset the impact of the liquidity trap would be to set the negative interest rate at a value such that it was greater than the loss in capital value associated with holding securities, for the money would provide no protection against capital loss due to the expected rise in rates.

Therefore, the adoption of NNIR would seek to prevent investors from taking refuge in money in order to avoid taking the risk of capital losses. Yet there are indications that Keynes himself, although finding Gesell's idea of stamped money 'sound,' would have been quite skeptical about it. In his words, 'there are many difficulties which Gesell did not face' (Keynes 1936, p. 357). The implementation of Gessel's proposal was one of Keynes's main concerns since there is a wide range of financial assets that are alternatives to money – government bonds, savings accounts, and even jewelry – which could make stamped money innocuous.

Some Post-Keynesians criticize the current NNIR policy. Palley (2016), for example, analyses possible effects on consumption, investment, and financial fragility. The author argues that, rather than financing investment through equity, firms would intensify financing through debt (since it is cheaper) and would also intensify share buy-backs and the distribution of dividends, increasing their balance sheets' leverage. Although one might

think that with stock prices increasing, banks could become more willing to lend more (Bhaduri et al. 2006), they actually might decide to restrict lending due to the high debt ratio. On consumption, the wealth effect through stock prices has another issue: even in the US, stock ownership is concentrated in high-income classes[19] that have a small propensity to consume; as a consequence, the transmission from NNIR to consumption would be small.

Beyond the ambiguous effects on investment and consumption, the financial impacts of NNIR could be adverse. Palley (2016) highlights three: lower bank profitability due to a decrease in net interest income, financial fragility, and instability (due to share buy-backs and capital gains), and financial disintermediation (reducing money holdings). In a long-term perspective, even if the NNIR policy succeeds, its growth model might be the same that fomented the 2008 crisis: indebtedness and asset price bubbles. In this way, a quick exit from NNIR would necessarily lead to burst bubbles in several markets.

Although MP is indispensable for overcoming the LT for Keynes and the Post-Keynesians, fiscal policy is crucial to generate autonomous demand and, consequently, to ease uncertainty. After all, if NNIR policy targets excess bank reserves, the mechanisms through which liquidity is induced to flow to real assets are not clear. In contrast, Keynes is clear about government efforts with proactive policies, such as public investment and other efforts to restore business confidence in order to stimulate MEC (Akram 2016).

However, one can note that, despite CBs expanding their balance sheets to avoid a debt deflation process, MP alone cannot affect the discount rate considered for valuation of investments amid high uncertainty. That is one of the reasons why, for Minsky, government should use fiscal policy alongside MP, in what he called the 'Big Government' function of the state in a crisis. Fiscal spending is a key element of macroeconomic policy that a government should use to restore profit margins, depressed in the downward moment of the business cycle.[20] The high degree of uncertainty (both political and economic, amidst the possibility of rising interest rates after many years of very low/zero/NNIR), the high risk of lending, and the high degree of indebtedness, are three central aspects to understand the 'trap' in which developed economies are stranded.

4.3 Financial-sector profitability and euthanasia of the rentier

One expected outcome of maintained NNIR would be a decrease in financial-sector profitability, once the rate of return of capital in the monetary form is negative. Beyond Keynes's critical view about Silvio Gessel's proposal, he considers the effects of long periods of low interest rates in chapter 24 of the GT. Keynes believes that it is better for a capitalist economy to reduce the interest rate to the point of full employment, leading to an increase in the stock of capital and, at the same time, a decrease in the MEC. At this point,

> this would not mean that the use of capital instruments would cost almost nothing, but only that the return from them would have to cover little more than their exhaustion by wastage and obsolescence together with some margin to cover risk and the exercise of skill and judgment. (Keynes 1936, p. 375)

19. According to Wolff (2017, p. 37), '85 percent of non-home real estate were held by the top 10 percent of households.'
20. 'Big government stabilizes not only the employment and income but also business cash flows (profits) and as result asset value' (Minsky 1986, p. 17).

As a result, Keynes (ibid., p. 376) argued that this would lead to what he called the 'euthanasia of the rentier,' or 'the euthanasia of the cumulative oppressive power of the capitalist to exploit the scarcity-value of capital.' A rentier, a functionless investor who lives off income on scarce capital, would have no more reason to exist, since capital income would be too low to guarantee gains that are not associated with the productive process, its management, and risks.[21]

The recent reality of low and negative interest, however, seems to have rejected Keynes's hypothesis (Krugman 2014). The fall in interest rates did not foster capital for productive activities or the expected euthanasia of the rentier. The financial sector continues to show significant gains (albeit in some cases reduced), with the securities markets (public and private) reaching record highs, leading to significant capital gains.[22,23]

It seems the rise in asset prices has prevented a significant drop in the profitability of the financial sector. The valorization of the stock of wealth provided by the fall in interest rates (and, thus, an increase in the price of securities) has been an important source of revenue for the financial sector. According to a report by the BoJ, 'it should be noted that financial institutions can boost their profits by selling assets that hold valuation gains, which tend to increase when interest rates fall and the yield curve flattens' (BoJ 2016). In other words, the gains from the sale of more valued assets (and with guaranteed demand by the purchase of bonds through CBs' LSAP policy) seem to be serving as a source of profitability, which prevents the 'euthanasia' of the rentier, at least for the moment.

Given that CBs still rely on the NCM model, agents know that very low/zero/negative interest rates will not be maintained indefinitely. By speculating with the interest rates in the future, they accumulate capital gains with asset inflation that is generated by the very MP approach that is dealing with the crisis. Once economies show signs of recovery and inflation starts to pick up (as has been the case with the US since 2015), CBs will increase rates. In this scenario, the problem of an LT is resumed: the risk of raising interest rates leads to the certainty of significant equity losses and a slow recovery process. The slow and hesitant rise of the Fed's interest

21. There are some references in Keynes's works prior to *The General Theory* on the problem created by the 'rentier.' In volume XXVII of the *Collected Writings*, Keynes discussed the possibility of imposing a 'capital-levy' on rentiers' gains (Keynes 1978, p. 329). In volume XII, Keynes expresses his worries about the possibility of England becoming a 'rentier nation': 'In the first place, it is extraordinarily important that we as a nation should not become, as time goes on, a rentier nation depending on interest from bonds and cut off from the living enterprises of the day, where constructive things are being done and today's wealth is being earned … . At any rate, it would be a great misfortune if we were to see others, let us say the Americans, owning the ordinary shares, in other words, the equities, of the new enterprises of each generation – today, for example, oil, motors, artificial silk – whilst the life offices of Great Britain were diverting the savings of their policyholders almost exclusively into the bonds of the old things, which, as it is politely expressed, "have stood the test of time."' (Keynes 1983, p. 160).

22. According to the BoJ (2017a), using 2016 fiscal year data, unrealized gains on available-for-sale securities are very expressive for larger banks in Japan, while bond holdings represent only a small fraction of unrealized gains. The amount of unrealized gains for regional banks is smaller and more dependent on government bonds. Since government bonds are somewhat scarce (BoJ 2017b), the burden of NNIR, due to its effects on bank profitability, is heavier on regional banks, since capital gains through selling securities are reduced compared to large banks.

23. Gains with trading accounts for the US financial-banking sector, for example, recovered its pre-crisis level in 2009, according to FDIC data.

rate since 2015 is a forerunner of the challenges that Europe and Japan will face when they abandon NNIR policy (which they have not done so far – in January 2019).

5 CONCLUDING REMARKS

This article discussed the recent adoption of unconventional MPs in the US, Japan, and the eurozone, its theoretical basis, and the possible Keynesian readings and criticisms of the conduct of such policies. We sought to reconstruct concepts such as liquidity preference, the liquidity trap, the marginal efficiency of capital, and euthanasia of the rentier, recovering original texts from Keynes and Minsky. In rescuing Keynes's insights, we can affirm that the exclusive emphasis on MP in the NCM is very different from his idea of combining fiscal and MP.

The implementation of NNIR represents a completely new development for MP. Although Keynes indirectly addressed the possibility of zero and negative rates in discussing Silvio Gessel's stamped currency proposal, his mistrust regarding the operationalization of such a mechanism means it is hard to know what he would have thought about NNIR policy. However, it is clear that in a crisis scenario with a LT, simply manipulating the money supply and interest rates would not be sufficient to rebuild an economy, and it is necessary to adopt policies to increase spending and income.

Finally, though nominal interest rates close to zero or negative are the perfect scenario for what Keynes called 'euthanasia of the rentier,' it is evident to us that wealth is being captured in the financial circuit, through the process of capital appreciation brought by low interest rates (and, thus, high prices of securities), combined with the CBs guaranteeing the purchase of bonds. The reversal of this process will be delicate, since the stock of public assets in the hands of the private financial sector is large and tends to suffer devaluations once interest rates steadily increase. This may help to explain the reluctance of the monetary authorities to stop LSAP altogether and/or to raise interest rates, since the weak recovery in economic activity appears to be partially based on a process of equity appreciation and the 'wealth effect' it generates for securities holders.

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