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The limits of monetary policy: from the liquidity trap to the zero lower bound

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Abstract

This article analyzes the limits of monetary policy from a theoretical perspective. The analysis parts from Keynes's theory presented in the *General Theory* in which the ideal of the liquidity trap is highlighted. Other limits faced by monetary authorities are also recognized, the analysis of uncertainty and expectations being fundamental. This is opposed to the concept of the *zero lower bound* (ZLB) which is used to indicate the current limits of monetary policy. The article concludes that the lack of current recognition of expectations prevents monetary policy from exceeding the limits it faces, rescuing the important role that fiscal policy plays as an alternative to influence the economic cycle.

Keywords: liquidity trap; zero lower bound; unconventional monetary policies.

INTRODUCTION

"We are all Keynesian now" is a phrase that was often heard in the years following the 2008 financial crisis. The crisis, triggered by the collapse of Lehman Brothers in September, led to the British economist's theory being revived for the umpteenth time. It seemed that the vast majority of economists agreed that the answers to the meltdown could be found in this famous text from 1936, written in response to the Great Depression.

Initially, interest in Keynes was centered on the role of fiscal policy as a means to overcome the crisis. However, reality took a different turn and the economic policy decisions taken to combat the crisis moved away from the Treasury and Finance ministries and towards the central banks.

This turn of events did not mean a re-reading of Keynesian theory could be avoided. Curiously, what at first seemed to be the use of Keynes to uphold expansive fiscal policy became the disguised return of a key concept in the *General Theory*, the liquidity trap. Although prevailing economic literature has not used this term much in the last few years and prefers the concept of zero lower bound (ZLB), the specter of this Keynesian concept haunts discussions.

The purpose of this article is to show that the theory that supports the idea of ZLB has left aside a fundamental tenant of Keynes' General Theory: the role of expectation and uncertainty. The concept of the liquidity trap is used to incorporate these factors into current theoretical debate and different approaches for solving the limitations faced by monetary policy are presented. This leads to the conclusion that unlike ZLB theories, which are unable to address the state's restriction in addressing expectations by implementing unconventional monetary policies, Keynes proposes a key element to overcoming depressions- fiscal policy. Thus, the Keynesian liquidity trap theory will be reviewed first, starting with an explanation of how monetary policy functions, according to the British author. The second section will analyze the concept of ZLB and compare it to the liquidity trap. The implications of using either of these to diagnose the current state of monetary policy are explained. The third section explains unconventional monetary policies and the arguments in favor of them. Even though these types of policy have a positive effect from a Keynesian perspective, they are not sufficient in the context of a liquidity trap. This leads to revisiting the Keynesian idea of the importance of fiscal policy, which can overcome the limits faced by monetary policy as it allows for intervention directly on the economic system, by not being contingent on asset managers' expectations.

Finally, it is important to mention that, although non-conventional monetary policies were used in different countries due to the 2007-2008 crisis, and even earlier in Japan, this article will focus on studying the policy implemented by the United States' Federal Reserve (The Fed). This does not mean that policies implemented by the U.S. Central Bank are different from those used elsewhere, but there are certain distinctions that should be considered in order to avoid hurried generalizations, even though they are not substantial. The final section of the article will share closing thoughts.

2. THE KEYNESIAN LIQUIDITY TRAP THEORY

The concept of a liquidity trap began to be part of economists' terminology after Robertson's (1940) commentary on the theory on interest rates. However, the idea of a liquidity trap as a fundamental element of macroeconomic theory can be attributed to Hicks. His interpretation of the Keynesian theory put forward that the General Theory is only a particular aspect of classical or neoclassical theory (Hicks, 1937).

Except for Krugman (1998), who uses this concept time and again when analyzing the Japanese economy in the 1990s, the arrival of monetarism had overshadowed this idea, at least in leading economic theory. However, after the onset of the 2008 meltdown and the problems faced by the leading central banks around the world, economists returned to the idea of the liquidity trap. In this article the discussion focuses on the interpretation made of Keynes' theory with the aim of explaining the limit found in the implementation of monetary policy (Kregel, 2014; Bullio Mattos *et al.*, 2019; Palley, 2019) or of justifying the use of non-conventional monetary policies from a Keynesian perspective (Sutch, 2018).

In this section the liquidity trap will be analyzed based on a review of the General Theory of Employment, Interest and Money, published by Keynes in 1936. Given that the discussion of this concept examines the limitations of monetary policy, Keynes' theory on this is used as a starting point.

The first key concept to understand of Keynes' liquidity trap theory is the preference for liquidity as this establishes the connection between the quantity of money and interest rates. People prefer liquidity and require cash for three reasons. The first is transactional; money is needed to buy goods and services. The second is precautionary; cash is kept aside as a reserve to deal with unexpected situations.

Lastly, there is speculation which has two motivations, both linked to future expectations. The first comes from the uncertainty around future interest rates. If a long-term asset is bought and cash is needed before maturity, there is a risk of incurring debt that is greater than the yield provided by the acquired asset. The second is that people view the future of markets differently than popular opinion. In some cases, they would rather keep their assets liquid, waiting for a future rise in interest rates and getting a better return by waiting to make their investment (Keynes, 2003). In other words, when looking at the speculative motive, the kind of expectations held on the future of interest rates determines whether people would rather keep assets liquid.

The speculative motive is the most important when looking at monetary policy. In general terms, according to Keynes, one can state that transaction and precautionary motives correspond to level of income, whilst the speculative motive responds to the interest rate level.

[...] But it is by playing on the speculative motive that monetary management (or in the absence of management, chance changes in the quantity of money) is brought to bear on the economic system. For the demand for money to satisfy the former motives [transactional and precautionary], is generally irresponsive to any influence, except the actual occurrence of a change in the general economic activity and the level of incomes; whereas experience indicates that the aggregate demand for money to satisfy the speculative- motive usually shows a continuous response to gradual changes in the rate of interest, i.e., there is a continuous curve relating changes in the demand for money to satisfy the speculative motive and changes in the rate of interest, as given by changes in the prices of bonds and debt with different maturities. (Keynes, 2003, p.177).

This does not mean that the interest rate has no effect on the demand for money for transaction and precautionary motives, but the effect is indirect. Given that a fall in interest rates tends to stimulate investment and therefore national income, people will keep more cash to make their transactions, proportional to increase of income. Hence, Keynes gives more importance to the direct effect that a change in interest rates has on the demand for money for the speculation motive.

Monetary authorities turn to open market operations to buy and sell securities and affecting interest rates. By buying securities in exchange for cash, the price of securities increases and the interest rate starts to fall. The larger the amount of cash one wants to inject by buying securities and debt, the greater the fall in interest rates (Keynes, 2003).

Thus, given the preference for liquidity, the interest rate will change due to changes in the offer of available cash. However, demand will also respond to changes in expectations of future interest rates. Open market operations can also be effective this way, as they can lead to changing expectations in relation to the Central Banks' future policies.

There is no direct relationship between a given rate of interest and the level of liquidity preference. It is not the absolute level of interest rates that is important, but its relationship to what is thought of as an "acceptably safe level" for interest rates. Each fall in the market interest rates the monetary authority causes, increases the gap in the safe level increasing the risk of illiquidity. This is due to the expectation the rate will eventually reach the safe level, which in the agents' eyes makes it risky not to keep their money liquid. Furthermore, each fall in interest rates reduces the profits obtained by giving up liquidity.

It is evident, then, that the rate of interest is a highly psychological phenomenon. [...] But at a level *above* the rate which corresponds to full employment, the long-term market-rate of interest will depend, not only on the current policy of the monetary authority, but also on market expectations concerning its future policy. The short-term rate of interest is easily controlled by the monetary authority, both because it is not difficult to produce a conviction that its policy will not greatly change in the very near future, and also because the possible loss is small compared with the running yield (unless it is approaching vanishing point). But the long-term rate may be more recalcitrant when once it has fallen to a level which, on the basis of past experience and present expectations of *future* monetary policy, is considered "unsafe" by representative opinion. (Keynes, 2003, p.182)

Monetary authorities have greater control over the short-term rate; however, because their policies play a relatively unimportant role in shaping expectations about long-term interest rates, their impact is constrained. If the long-term interest rate reaches a level that is too low relative to the safe level, it is unlikely it will keep going down. And asset managers will be unwilling to accept lower interest rates.

The situation of expectations and the extent to which monetary policies are considered is fundamental. If public opinion feels that the policy is experimental or can change easily, it will be hard to achieve a considerable reduction in the long-term interest rate, because the preference for liquidity can increase almost limitlessly in response to the reduction of interest rates below a given figure. However, the same policy can be successful if public opinion thinks that it is reasonable, practical and in the public interest (Keynes, 2003).

When trying to achieve a certain target for employment, the main issue for the monetary authority lies in finding a stable long-term interest rate that is high enough to satisfy marginal capital efficiency and volatile profit projections that change constantly. Monetary authorities therefore try to keep the interest rate in line with the level of expectations. However, given that they are extremely volatile, the task is more complicated than it initially seems. Additionally, volatility can prove to be an advantage in some cases as the idea of what constitutes a reasonably safe interest rate is not based on firm knowledge, thus the monetary authority being moderately persistent with its policies and proposals can change public opinion. It all depends on how asset managers interpret the Central Bank's decisions.

A monetary authority's ability to establish a complex offer of multi-term debt and risk management faces another type of limitation. One of these could be overcome if the Central Bank decided to change its practices. If monetary authority were open to buying and selling variable-yield debt, it could influence not only short-term interest rates but the long-term rate.

"Perhaps a complex offer by the central bank to buy and sell at stated prices gilt-edged bonds of all maturities, in place of the single bank rate for short-term bills, is the most important practical improvement which can be made in the technique of monetary management." (Keynes, 2003, p.184). In doing so, the uncertainty around long-term interest rates would decrease, creating a more direct relationship between the quantity of money and the interest rate. By buying long-term securities, the Central Bank would push their price up and their interest rate down.

A third limitation lies in the response to the preference for liquidity over changes in interest rates. "There is the possibility, for the 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. In this event the monetary authority would have lost effective control over the rate of interest." (Keynes, 2003, p.185). This scenario is what is known as a liquidity trap and occurs because even a considerable increase in the quantity of money could cause an extremely high level of uncertainty about the future, making the preference for liquidity due to the precautionary-motive extraordinarily high. People prefer to keep their money liquid for fear of what can happen in the future. The Central Bank will buy securities in exchange for cash, which will go into asset managers' pockets as they wait for a better time to invest.

This situation will happen in very abnormal circumstances, such as the fallout from severe economic or financial collapse that makes the expectation so negative that the interest rate stops being the fundamental indicator for investment decisions. During these times, the interest rate tends to decrease considerably, as do the rest of the prices in the economy, and people prefer to hold on to cash. It is not just that the return is low, but that the degree of uncertainty caused by general economic conditions is so high that people are extremely risk averse.

Even if the Central Bank's operations are extended to other types of securities, the risk of falling into the liquidity trap does not go away. In one of the limitations discussed, the inability to influence long-term interest rates is related to a technical question that has to do with the type of securities that the Central Bank is willing to buy. But the inability to change interest rates because of the liquidity trap is related to expectations, which the Central Bank can control, but only to a certain point. As previously mentioned, it is not the interest rate level that is relevant, rather than its relation to what is considered a safe interest rate. Thus, when Keynes states that "the interest has fallen to a certain level" it does not mean that this level is necessarily very close to zero. Because if the interest rate that public opinion considers to be safe increases considerably, an interest rate that in other circumstances would be thought normal could be seen as too low and risky.

In fact, there Keynes sees additional factors that would set a limit way above zero for a practicable drop in interest rates. The first of these is the institutional factor that affects the conditions in which capitalist markets function and that is explained by the cost of connecting credit lenders and borrowers. The second is the psychological factor, which comes from the uncertainty of future interest rates and is thus related to the absolute preference for liquidity and the liquidity trap. (Keynes, 2003).

In summary, according to Keynes, the Central Bank influences interest rates through increases in the quantity of money that occur due to open market operations. On buying securities, the price of these increases and interest rates tend to fall. The policy's success will depend in great part on asset managers' expectations of the future, and if they think that the level that the interest rate is being set is above or below a "safe" interest rate. Thus, once the interest level falls too low, increases in the quantity of money will have no effect, as there will be an absolute preference for liquidity. A high level of uncertainty about the future will mean that the demand for money due to the precautionary motive will be very high, absorbing all the money injected into the economic system. At that point, the Central Bank loses control of monetary policy

3. ZERO LOWER BOUND (ZLB)

Before the 2008 financial crisis, the Fed was in a difficult situation. Financial markets were going through a period of high volatility caused by a series of institutional bankruptcies that put the entire financial system at risk. Recession loomed large on the horizon as an ever-more real threat.

The Fed responded as it usually does, by modifying short-term interest rates by means of open market transactions. The amount of available reserves for the banking system are managed through these kinds of transactions, and they in turn influence the interest rate in the federal funds market. Changes in these rates bring about changes in other short-term interest rates, which then impact on long-term interest rates, which changes overall financial conditions and, therefore, levels of inflation and employment (Yellen, 2016).

As can be seen, this mechanism is broadly similar to the one presented by Keynes. The difference lies that in The General Theory, the Central Bank controls the amount of money, whilst in reality the inability of monetary authorities to determine that aggregate is widely acknowledged. The policy instrument is seen as the interest rate. However, in both cases the objective is to modify the short-term interest rate by means of open market transactions in order to impact long-term interest rates.

Cuts to interest rates began in 2007; by 2009 the rate was at 0.16%. As the macroeconomic conditions continued to be unfavorable, this was a problem for the Fed. The rate was already so low that the possibility of continuing to cut it decreased enormously.

The Fed turned to the concept of ZLB or zero lower bound to explain this situation. According to the BIS,² this limitation occurs when two factors combine. The first was the cost of cash holdings, which is defined as the difference between the benefit of keeping cash and the cost of storing it. The second is financial intermediaries' response to very low rates that could negate its effect on the economy. If interest rates become negative, banks will keep their deposit rates above zero. They will not be willing to charge their clients for depositing money for fear that they will keep their money in cash, whilst the rates that banks charge for loans continue to fall. Thus, the interest rate cannot be pushed below zero (Committee on the Global Financial System, 2019).

Added to the impossibility of nominal interest rates going below zero, the neutral interest rate has to be below that level. According to Summers (2016), this is what the US economy faced once the crisis started, explained by the increase in tendencies to save and the decrease in tendencies to invest.

According to Palley (2019) the ZLB is a nominal constraint that limits the level interest rates can reach, a friction that is added to the new Keynesians' theory. When the neutral or natural interest rate is negative, the nominal interest rate cannot be adjusted to that level as money has a nominal yield of zero, which sets the floor for this type of rate. Therefore, both the goods' market and the credit market are unbalanced with an excess supply. There is

too much money available to be loaned and too many goods to be sold. If the nominal interest rate could be reduced, the demand for both goods and credit funds would increase and there would be a balanced economy again (Palley, 2019). "Recovery can only occur if the nominal interest rate is below that of the 'real' interest rate". If the actual rate is below zero, it is the ZLB that prevents monetary policy provoking an expansion of the monetary offer" (Kregel, 2014, p.2)

Krugman's explanation is similar. Even when interest rates are low, demand is lower than needed to achieve a target level of employment, and interests cannot be adjusted below zero, given that investors always have the choice to simply keep cash (Krugman, 2013). Thus, the liquidity trap is defined as "this strange condition in which monetary policy loses control because the nominal interest rate is essentially zero, in which the quantity of money becomes irrelevant because money and bonds are essentially perfect substitutes" (Krugman, 1998, p.137).

From this viewpoint, the problem is that the real or natural interest rate that would allow target employment rates to be reached, is negative. Given that the nominal interest rate cannot be adjusted to below zero, it is impossible for the monetary authority to achieve the interest rate target. Thus, monetary policy's key instrument stops being effective.

Other theories also attempt to explain the limitations of monetary policy. According to Palley, there are two separate issues. One is when the interest rate reaches its floor, which explains ZLB. The other is when investment does not respond to a fall in interest rates, which is more akin to the liquidity trap (Palley, 2019). In the latter, investment would not increase even if interest rates were negative. This stems from the idea that marginal investment efficiency is zero or reaches negative levels, due to decreasing capital being marginally productive and increasing marginal costs associated with modifying the stock of existing capital. In addition, there are assets similar to money, that like cash, will not see returns reduced due to interest rates falling. The combination of these two factors explains why investment stops responding to changes in interest rates.

ZLB is not the problem....it is the existence of NRAs such as cash, land, commodities like gold, assets like patents and copyrights, assets like knowhow and institutional capital held in existing firms, and streams of rents owned by firms with monopoly power. The price of those assets will be bid up by negative interest rates, but investment will not increase. Firms will borrow to return equity to shareholders and they will engage in bidding wars (for example, take-overs) for existing assets, but they will not invest. (Palley, 2019, p.163).

Palley (2019) believes that the liquidity trap occurs due to investment saturation, leading to returns being marginal or even zero which causes companies to buy other types of assets, instead of investing. Uncertainty due to future interest rates is not considered to be an explanatory factor. Even though the problem is not that the interest cannot go below a certain level, in the end Palley concludes that the liquidity trap occurs for economic factors relating to assets' costs and returns.

As can be seen in Palley's interpretation (2019) and in those of the ZLB, what is under consideration are institutional factors pointed out by Keynes (2003) that stop the interest rate falling below a certain level: the characteristics of certain assets or economic factors. The way in which financial systems function impedes the interest rate decreasing, so the Central Bank cannot adjust it to the level needed to increase investment, production, and employment. However, the psychological factor is ignored -the uncertainty of future interest rates. As Kregel states "it is the expectation of future interest rates that sets the limit for current rates [...] whenever the general public thinks that rates will increase above the square of the current rate, it will be impossible to convince them to keep anything other than cash, and the actual rate will be immovable using traditional monetary policy" (Kregel, 2014, p.3).

It is the radical uncertainty, characteristic of capitalist economies, that diminishes confidence in future conditions and causes the liquidity that cash provides to be of preeminent importance (Bullio Mattos *et al.*, 2019).

4. NON-CONVENTIONAL MONETARY POLICIES

A situation's diagnosis determines the response to the problem. Recognizing and explaining ZLB was the starting point for non-conventional monetary policies. These policies are defined by using methods other than the short-term interest rate to influence financial conditions. "Some were designed to affect term spreads (or, equivalently, long-term risk-free rates), while others were directed at influencing liquidity and credit spreads (or, equivalently, interest rates on various non- risk-free instruments). Some tools were aimed at restoring liquidity conditions and asset valuations in the financial system as a means of supporting the monetary policy transmission mechanism" Committee on the Global Financial System, 2019, p. 10). Some of the tools used across the globe include large-scale asset purchases or Quantitative Easing (QE), Forward Guidance (FG), negative nominal interest rates, and the control of long-term returns.

For the purposes of this article, we will only review the first two as these were the most used by the Fed to increase monetary policy's impact and moreover are considered some of the tool options for the US Central Bank (Yellen, 2016; Bernanke, 2019 and 2020).

QE consists in increasing the Central Bank's balance sheet by buying assets, either government bonds or assets issued by the private sector. "It is the Central Bank using its capacity to create acceptable means of payment in unlimited quantities to buy assets" (Joyce *et al.*, 2012, p.276). In March 2009, the Fed announced the purchase of Mortgage-Backed Securities, or MBS and of US Treasury securities which reached a value of 1.725 trillion dollars, in what came to be known as QE1. In November 2010, QE2 was announced, and it came to 600 billion dollars, and in September 2012 QE3 was announced along with the Fed's commitment to buy Treasury securities and MBS until the labor market improved substantially. This last phase ended in October 2014, with the total of assets bought reaching 3.8 billion dollars (Bernanke, 2020). Partly due to these measures, the United States' monetary base went from 837 billion dollars in August 2007 to over 4 trillion dollars in 2015 (Bullio Matteos *et al.*, 2019).

According to Bernanke (2020), President of the Fed at the time, this type of policy was being implemented for the first time. There were two arguments in favor of QE; the first was that buying assets would drive up their price, allowing investment to increase through the portfolio balance effect. The Central Bank buying less-liquid assets allowed those who wanted to invest to have the liquidity to undertake their projects (Joyce, *et al.*, 2012). The second argument in favor of QE was that it would act as a signal that monetary authorities would keep interest rates low for a long period of time, which

would lead to investors pushing for lower long-term interest rates, to which the economy would respond by increasing spending on household goods and services (Bernanke, 2020)./p>

Keynes' arguments should be added to those mentioned above. As described in the first section, Keynes believed that by changing the operating conditions used by central banks, broader objectives could be achieved. "Where, however, (as in the United States, 1933-1934) open-market operations have been limited to the purchase of very short-dated securities, the effect may, of course, be mainly confined to the very short-term rate of interest and have but little reaction on the much more important long-term rates of interest" (Keynes, 2003, p.177). This position picks up on elements that Keynes discussed in *A Treatise on Money*, where he also defended the practice of a massive securities buyout by the Central Bank, allowing it to impact share prices and levels of long-term interest rates. In this text, Keynes' stance on monetary policy's capacities is much more optimistic, saying that even though conventional policies do not have such an effective impact on long-term interest rates, using less orthodox methods could achieve the objective, during a depression (Kregel, 2012).

QE allowed the Fed to operate with other types of assets, so that the impact of its decisions could affect other types of rates and securities that only responded indirectly until then. However, according to Kregel (2014), policies would be implemented differently if one wanted to follow Keynesian theory. Instead of fixing the amount that was to be acquired, the Central Bank would fix the price and let the market choose the transaction amount. "Keynes would have probably defended a more direct control on the long-term interest rate" (Bullio Mattos *et al.*, 2019, p.195). However, this only solves the issue if there is ZLB, as central banks' actions do not necessarily modify the marginal efficiency of capital.

When looking at the liquidity trap, the situation is more complicated. According to Keynes, a bruising fall in the price of variable yield securities that has had a negative effect on marginal efficiency of capital could be explained by a weakening of speculative confidence or credit status. The drop could have been caused by either of these, but recovery requires them both to revive (Keynes, 2003). By buying assets, the Fed tried to recover speculative confidence, hoping that it would in turn lead to a recovery in credit status. However, one does not necessarily lead to the other.

Investment in a capitalist economy carries two risks, the borrower's risk which is inherent in any investment, i.e. the possibility that the profit obtained is less than hoped and the lender's risk, namely the possibility of the borrower defaulting, either because their investment project failed or for some other reason (Keynes, 2003). If the lender's risk is thought too high, it does not matter how much money is injected by buying assets, even to the extent of speculative confidence being recovered. Credit status will not improve unless expectations change. The problem lies both in the monetary policy tool and the transmission mechanism. Whilst investment decisions also depend on marginal efficiency of capital, the interest rate level that the Central Bank might or might not fix could have no influence on investment decisions. However, it can also be the case that even if the level of marginal efficiency of capital is enough to stimulate investment with lower interest rates, as the lender's risk is too high, it is the monetary policy's transmission mechanism that is not working. The Central Bank would be sending the right signals to the financial system to lower interest rates, but the transmission mechanism breaks down when financial intermediaries consider that the risk of increased financing is too high. The financial intermediaries' expectations are almost as important as those of the investors in terms of explaining how ineffective monetary policy is. When the risk is thought too high by intermediaries, the transmission mechanism fails. However, when investors find the level of risk too high, the instrument stops being able to modify expectations.

The FG consists of a constant stream of communiqués from the monetary authorities in which they share how they hope that the economy and policies will behave in the future. From August 2011, the Fed's announcements changed to being explicit commitments on keeping or following a given policy until a certain date. The objective is to modify market expectations, reduce uncertainty and promote confidence in the monetary authorities in such a way that interest rates fall significantly.

According to Krugman, monetary policy can overcome the liquidity trap if it is capable of credibly promising that it will pursue a future price level. Asset managers believe that the Central Bank's goal is to keep prices stable, and they behave based on thinking that expansive policies are transitory. The problem therefore lies in the Central Bank's credibility because agents do not believe that the monetary authority is going to commit to the path they have chosen (Krugman, 1998). The FG could create credible expectations on the Central Bank's future policy, which would allow it to overcome the liquidity trap as seen from that perspective.

Based on Keynes' theory, a monetary authority's credible commitment has a positive impact on the effect of its policies on interest rates. When people believe that the policy implemented is satisfactory, they do not expect interest rates to rise in the future. However, the fundamental issue is again the uncertainty around the future of interest rates. Even if the Central Bank does everything possible to make their commitment appear credible, the instability of the marginal efficiency of capital can prevent the liquidity trap from being overcome. Krugman (1998) ignores this factor based on a supposition of rational expectations; uncertainty lies with the Central Bank, not with asset managers' actions. Given the right signals, asset managers will respond as expected. In Keynesian theory uncertainty about asset managers' responses is the most important factor for explaining the limitations of monetary policy.

Both QE and FG have the objective of providing monetary authorities with greater room to maneuver, achieving a situation that is similar to when the nominal interest rate is not close to ZLB. "When new policy tools are used, monetary policy can achieve similar results to traditional policies, if the neutral interest rate were 3 percentage points higher" (Bernanke, 2020, p.945).

The limitation does not lie with the ZLB but with the lack of policies that increase marginal efficiency of capital (Kregel, 2014). Even though it seems obvious that the Fed is trying to increase investment, employment and production, the targets that are explicitly mentioned most often are those of increasing inflation and achieving a fall in interest rates. This does not allow alternative measures to be explored. These are measures that do not affect these medium-term objectives, but can achieve an increase in investment, production, and employment.

This is due to an eminently monetarist view of monetary policy. Despite the Fed having a double mandate and the level of production being incorporated into the Taylor rule, the primary objective for central banks is to control price levels. Thus, even when they seek to increase production levels, they do it by controlling price levels, which causes inflation.

Once all these factors have been taken into account, it seems that fiscal policy is the only way to solve the liquidity trap, as it can directly influence economic conditions without needing to modify expectations. By increasing aggregate demand and/or directing investment directly, a stimulus to

increase production and employment is created. By increasing sales, profits expected by entrepreneurs will increase, stimulating private investment. Even though it is true that uncertainty is unquantifiable and that it is impossible to know asset managers' reactions beforehand, fiscal policy is a much more powerful tool for stimulating economic activity. This is because, as opposed to monetary policy, it does not depend on the transmission mechanism to have a direct impact on the economy.

According to Yellen, 'a wide range of possible fiscal policy tools and approaches could enhance the cyclical stability of the economy' (2016, p.13). Bullio Mattos *et al.* (2019) believe that fiscal spending is something governments should use to restore profit margins. However, despite the importance of fiscal policy being recognized in theory, in practice this option has been discarded.

Bernanke (2019) attributes this to a combination of political and ideological limitations and limits in place on fiscal action, in certain countries. The problem is not only that central banks are exclusively interested in inflation (Seccareccia 2020), but that fiscal policy also has the end goal of establishing stability in price levels (Sims, 2016). In this context, the responsibility falls on central banks when it comes to stimulating production and employment. Adopting unconventional monetary policy "[...] was a clear attempt by central banks to show the continued relevance of monetary policy even with low interest rates (Rochon and Vallet, 2019, p.4). Currently, monetary policy is seen as the only stabilizing tool for the macroeconomic situation and as soon as limitations to its functioning are found, the solution is sought within the very policy.

If this point of view does not change, it will be impossible to solve issues associated with monetary policy's limitations.

For my own part I am now somewhat skeptical of the success of a merely monetary policy directed towards influencing the rate of interest. I expect to see the State, which is in a position to calculate the marginal efficiency of capital-goods on long views and on the basis of the general social advantage, taking an ever greater responsibility for directly organising investment; since it seems likely that the fluctuations in the market estimation of the marginal efficiency of different types of capital, calculated on the principles I have described above, will be too great to be offset by any practicable changes in the rate of interest." (Keynes, 2003, p.149).

5. CLOSING THOUGHTS

Analyzing the concept of the Keynesian liquidity trap creates a greater understanding of the assessments made of the role of monetary policy, in the years following the 2008 crisis.

Given that the concept of ZLB emphasizes the technical and institutional limits that stop interest rates reaching a certain level, the measures used to resolve the situation sought to increase the tool's room for maneuver. Effectively, this meant overcoming the limit imposed on the fall of interest rates using alternative tools. This perspective proposes that the problem lies in the level of interest rates that allows investment to be stimulated being too low. However, a fundamental factor for understanding the transmission mechanism for monetary policy is not taken into consideration, that of the state of expectations. If the return that investors expect to obtain is low, investment will not occur, irrespective of the interest rate level.

The liquidity trap highlights the importance that psychological motivation has in explaining how economic systems function. One of the fundamental reasons that monetary policy is incapable of overcoming the limits it faces, is its inability to impact the state of long-term expectation. The policies that allow the economy to surmount this limit must have the objective of modifying the marginal efficiency of capital, or in other words, the state of expectations.

A greater role for fiscal policy is needed but should not be seen as simply increasing public spending. As Keynes (2003) says, what must happen is that the State "takes on greater responsibility in the direct organization of investments:" Therefore, a structural change in the State's role in the economy is needed. Its intervention must be more direct, and this is even more pertinent at a time in which the power held by financial intermediaries complicates the execution of policies implemented by central banks for investment, production, and employment. However, the discussion remains open on how effective these kinds of measures would be, in the same context of expectations that limit monetary policy's impact. On the one hand, the State's direct stimulus of demand could improve expectations, strengthening the effects of fiscal policy. On the other, capital's low marginal efficiency could be strong enough to counteract the initial effects of government investment.

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¹ This is the central argument in Krugman's theory to explain the liquidity trap. Central bank's policies are not effective because agents do not believe that the decisions made will be upheld in the future. Asset managers believe that at the first sign of positive news, central banks will go back to applying contractionary policies and so they prefer to keep hold of cash, waiting for the eventual raise in interest rates (Krugman, 2013)

² The BIS text uses the concept of effective lower bound instead of ZLB, showing that this report stems from the idea that the limit does not necessarily have to be zero. In spite of this difference, the theoretical argument is essentially the same.