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This article is dedicated to the memory of Gian Luigi Vaccarino.

Abstract: The ghost of deflation is once again one of the main worries of policymakers. Recently deflation is indeed been characterizing the Eurozone. The renewed concern about deflation is due in part to the historical association of deflationary episodes with financial crises, recession, stagnation and even depression. In deflationary conditions, nominal interest rates are more volatile since uncertainty increases and they may come close to their lower limit of zero: if a "liquidity trap" is at work, monetary policy is incapable of stimulating aggregate demand. This paper seeks to show that to avoid a "Japanization" of the Euro-zone it is urgent to implement adequate economic policies in accordance with the post-Keynesian approach. The ECB in recent times has tried to do its best to save the situation through espansive monetary policies adopting both quantitative and qualitative easing (QQE). Unfortunately, these kinds of policies have tended more to prevent the recession from becoming far worse than enabling a significant fight against deflation and promoting economic recovery. Conventional and unconventional approaches in economic policy are investigated with a critical eye and contrasted with the theoretical insights suggested by Post-Keynesians.

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Introduction

The ghost of deflation is once again one of the main worries of policymakers; as we know all too well, this phenomenon blighted the lives of millions of people in the 1930s[1] and prompted widespread and heated debate among economists. After an absence of almost half a century, deflation has in fact characterized the Japanese economy for at least the last two decades and, more recently, the Eurozone (see Fig. 1A,B,C)[2].

The recently renewed concern about deflation is due in part to the historical association of deflationary episodes with financial crises, recession, stagnation and even depression. In deflationary conditions, nominal interest rates are more volatile since uncertainty increases, and may come close to their lower limit of zero, at which point monetary policy loses most if not all of its effectiveness: as Keynes (1936) pointed out, if a "liquidity trap" is at work, then monetary policy is incapable of stimulating aggregate demand.

The current deflation phenomenon in Europe has been characterized by a sustained decline in the general price level of current goods and services and/or a fall in the prices of existing real and financial assets.[3] To appreciate the fact that the economic picture has been coming ever closer to that of Japan in the last few decades, and to start worrying about the real possibility of a "Japanization" of the Eurozone, it is

[1] In the United States, during this period industrial production fell by 50 percent and GDP by almost 30 percent; as from 1930–1932 deflation was about 10 percent per year.

[2] The Eurostat index shows that total inflation (year over year) start to decrease since the end of 2012 (Fig. 1A) and has dropped to -0.6% (Fig. 1B) on Janary 2015, which is way under the European Central Bank (ECB) target, close to 2%. Fig. 1C shows the Euro area annual inflation and its main components since Jan 2007 up to May 2017.

[3] Asset price movements, in turn, are in an important part of the transmission mechanism of monetary and fiscal policies. Asset price booms and busts often stand in the way of price stability and full employment equilibrium, and complicate the task of the monetary and fiscal authorities. They may at times precede, be associated with or even cause downward movement in the general price level of goods and services.

sufficient to overview the inflation rate (see fig. 1A), the structure and the increasing risk of volatility of interests rates,[4] along with the stagnation in growth rates in the area (cf. fig. 2A). In recent years, the head of ECB, Mario Draghi, has tried to save the situation through expansive monetary policies adopting both quantitative and qualitative easing (QQE). Unfortunately, as discussed later in this paper, these kind of emergency policies have above all only tended to prevent the recession from becoming far worse, rather than enabling a significant fight against deflation and promoting economic recovery.

Economist working in the conventional arena has scrutinized deflation and liquidity trap, particularly as regards Japan (cf. Posen 2010, and Uedo 2012, Bernanke, 2000, 2002; Rogoff and al., 2003; Svensson, 2003; Hayashi and Prescott 2002, Goetz, 2005, Koo 2008, Krugman 1998a, 1998b; 2007; 2010; Adam and Billi 2006, Eggertsson 2005, 2006, 2012, Eggertsson and Krugman 2010, Eggertsson and Pugsley 2006, Eggertsson and Woodford 2003, Jung, Teranishi, and Watanabe 2005).

The timing of the renewal of mainstream scholarly and political concern with, and interest in deflation, is surprising; but, as I mean to stress in this paper, the belated theoretical "discovery" of the problems of deflation and of the liquidity trap by the mainstreamers, as well as the economic policies suggested (conventional and unconventional), are far from the original insights arrived at both by Keynes himself (1930, 1936), and by many post-Keynesians (PKs) (cf. Minsky (1982, 1986); Kregel (1998, 2011, 2014), Palley (2008, 2013), Wray (2003, 2012), Wray and Papadimitriou (2003); Akram (2012; 2014; 2015)). In so doing, the mainstream economists limit both the depth of the analysis and the policies suggested to cope with such challenging economic problems.

In this paper I point out the effects involved with the deflation process and the debate on the adeguate economic policies needed both *to avoid* and *to escape* from deflation

[4] The ECB left its benchmark refinancing rate unchanged at a record low 0.05% on October 22nd, 2015. The interest rates on the marginal lending facility and the deposit facility were also left on hold at 0.30 percent and -0.20 percent respectively and the same has happened for the ECB's repo rate. As to the risk of increasing volatility, suffice it to remark that during a deflationary process the level of overall uncertainty in the economy increases.

cum liquidity trap. In my opinion, for a complete understanding of what has been happening in the Eurozone in recent times and to suggest the adeguate economic policies to implement, it is in fact necessary to compare and contrast the traditional approaches with the post-Keynesian perspective.

The paper is structured thus: in section 1, I begin with brief discussion of the causes and consequences of deflation, looking back to the founding fathers on the topic; in section 2, I look into the fact that deflation, accompanied by a 'liquidity trap', may be the "nightmare" of economic policymakers; in section 3, I compare and contrast the economic policies suggested by the conventional approaches and by post-Keynesians to avoid and escape from debt deflation spiral *cum* liquidity trap; in section 4, I draw my conclusions.

1. The founding fathers on analysis of deflation

As from 1923, Keynes wrote extensively on the dangers of deflation and dwelt on the effects that a fall in the level of prices can have on income and employment, opening the way to a new and stimulating line of research. Thanks to his analysis deflation is, in almost all cases, seen as a side effect of a collapse of aggregate demand, or in other words a severe decline in aggregate spending that may bring about recession, rising unemployment, financial distress and/or financial crisis.
Keynes was well aware that deflation is much worse than inflation. As we know, his analysis of deflation is linked particularly to the redistributive effects associated with variations in the value of money. According to Keynes, while on the one hand the fall in price level favors the class of rentiers (as creditors), on the other hand it penalises the entrepreneurs (as debtors), but it is on their decisions that the levels of both current production and investment depend.

With regard to the former aspect, Keynes observes that "a fall in prices, effects redistribution of real wealth from those who make the decisions which set production into motion to those who are inactive once they have lent their money" (1923, p. 30). In the Tract on Monetary Reform, moreover, Keynes makes it perfectly clear that, as he sees it, expectation of a fall in the level of prices can entail a drastic cut in production. Keynes makes a distinction between fall in current wages and expectation of further reductions in them in the future: "If the reduction of money-wages is expected to be a reduction relatively to money-wages in the future, the change will be favourable to investment….. If, on the other hand, the reduction leads to the expectation, or even to the serious possibility, of a further wage-reduction in prospect, it will have precisely the opposite effect, For it will diminish the marginal efficiency of capital and will lead to the postponement both of investment and of consumption." (1936, p. 263). As we know, in the General Theory (1936) Keynes showed that wage and price deflation leads to a decline in effective demand and thus a fall in income and employment since the wage-earners' propensity to consume and the entrepreneurs' propensity to invest are much greater than the rentiers'.

Keynes thus showed particular attention to the effects produced by a cumulative process in expectation of a fall in prices, and thus to the effects of wage and price flexibility in a dynamic context. However, it is above all when we consider the effect that the deflationary process has on the *debt burden*, in the case of agents who have borrowed money, that we find particularly good reason for a substantial critique of Pigou's "real balance effect" and its alleged stabilizing role. In this connection Keynes observes that " …the depressing influence on entrepreneurs of their greater burden of debt may partly offset any cheerful reactions from the reduction of wages. Indeed if the fall of wages and prices goes far, the embarrassment of those entrepreneurs who are heavily indebted may soon reach the point of insolvency, — with severely adverse effects on investment. Moreover the effect of the lower price-level on the real burden of the national debt and hence on taxation is likely to prove very adverse to business confidence." (ibid. p. 264). Should the debt burden be such

as to produce a state of widespread insolvency, then entrepreneurs faced with increasing liabilities may well be tempted to sell the assets. This would lead to a fall in the price of the assets, with negative repercussions on the stability of the general financial structure. In fact, in "The Consequences to the Banks of the Collapse of Money Values" of 1931 Keynes notes that a sharp fall in the value of equitable assets can also mean greater financial fragility for the banks since they would see a drastic reduction in their "margin of safety". Deterioration in the "state of credit" would ensue, again with negative impact on investment, income and employment[5].

The analysis proposed by Keynes regarding the destabilizing effects brought about by the increase in debt burden contains distinct echoes of the theoretical contribution by Irving Fisher on the Great Depression of '29: Keynes and Fisher are then to be considered as the founding fathers for the development of what came to be called the debt deflation school in economics. In his article entitled "The Debt Deflation Theory of Great Depressions" (1933), Fisher had in fact traced the phenomenon of persistence in income and employment decline precisely to the effect produced by wage and price deflation[6].

In Fisher's analysis (1932, 1933) of great booms and depressions, two key factors predominate over various others that remain subordinate, namely over-indebtedness to start with and *deflation* following soon after. As Fisher summed it up (1933 p. 341-42): "No exhaustive list can be given of the secondary variables affected by the two primary ones, debt and deflation; but they include especially seven, making in all at least nine variables, as follows: debts, circulating media, their velocity of circulation, price levels, net-worths, profits, trade, business confidence, interest rates". Fisher

[5] Keynes (1931) in this article, connected then the "asset price deflation" with the "commodity market price deflation" previously emphasized in The Tract. As discussed later in this section these aspects were the cornerstones of the analysis of deflation phenomena by Minsky (1982). As already argued in footnote n. 3 when these types of deflation are linked, asset deflation may at times precede, be associated with or even cause downward movement in the general price level of goods and services.

[6] The chain reaction sweeping through both firms and the banks and financial institutions, plunging them into bankruptcy in late 1933, went so far as to threaten the stability of the capitalistic economic system at the worldwide level, eloquently demonstrating the fallaciousness of the self-balancing principle.

assumed accordingly, that: "at some point of time, a state of *over-indebtedness* exists, this will tend to lead to liquidation, through the alarm either of debtors or creditors or both. We may then deduce the following chain of consequences in nine links:

(1) Debt liquidation leads to distress selling, to (2) contraction of deposit currency, as bank loans are paid off, and to a slowing down in the velocity of circulation. This contraction of deposits and of their velocity, precipitated by distress selling, causes (3) a fall in the level of prices, or in other words a swelling of the dollar. Assuming, as above stated, that this fall of prices is not interfered with by reflation or otherwise, there must be (4) a still greater fall in the net worth of business, precipitating bankruptcies and (5) a like fall in profits, which in a "capitalistic," that is, a private-profit society, leads the concerns which are running at a loss to cut down on (6) output, trade and employment of labor. These losses, bankruptcies, and unemployment lead to (7) pessimism and loss of confidence, which in turn lead to (8) hoarding and further slowing down in the velocity of circulation. The above eight changes cause (9) complicated disturbances in the rates of interest, and in particular a fall in the nominal, or money, rates and a rise in the real, or commodity, rates of interest" (1933, p. 345).

Debt-deflation came under reconsideration and subsequent re-elaboration by Minsky (1975; 1982), who may be considered one of the pioneers of the debt deflation school. His analysis of deflation processes is in fact a cornerstone of the financial instability hypothesis (FIH). Minsky points out that instability and crisis are endogenous to a sophisticated and complex financial system (cf. Sau, 2013) and deflation is part of his analysis of the cycle as the result of "longer waves in financial relations" (cf. Minsky, 1963; 1995). In contrast to Fisher's debt deflation theory, Minsky explained the initial condition of "over-indebtedness" as the result of the way financial markets operate[7].

[7] These aspects were further scrutinized by several economists who follow post-Keynesian perspectives (cf. Kregel (1998, 2011, 2014) Palley (2008, 2013) and Wray (2003 [1998], 2012; Sau, 2015).

Actually, capitalist economies exhibit inflations and debt deflations in both the commodity and asset prices, which seem to have the potential to spin out of control: inflation feeds upon inflation (i.e booms and increase in asset prices) and deflation feeds upon deflation (busts and falls in asset prices). The FIH is a theory of the impact of debt on system behavior and also incorporates the manner in which debt is validated. That is, the FIH takes banking and the behavior of the financial system, in the broader sense, as relevant to understanding the pro-cyclical dynamics of the macroeconomy.

According to Minsky, in fact, whenever speculative or Ponzi units[8] find themselves obliged to liquidate capital goods to meet payment commitments, there may be a plunge in the realisable price of such goods, with the risk of rapidly turning a situation of illiquidity into widespread insolvency. As pointed out by Minsky (1982 p. 6-7) himself: "If payment commitments cannot be met from the normal sources, then a unit is forced either to borrow or to sell assets. Both borrowing on unfavourable terms and the forced sale of assets usually result in a capital loss for the affected unit. However, for any unit, capital losses and gains are not symmetrical: there is ceiling to capital losses a unit can take and still fulfil its commitments. Any loss beyond this limit is passed on to its creditors by way of default or refinancing of the contracts. Such induced capital losses result in a further contraction of consumption and investment beyond that due to the initiating decline in income. This can result in a recursive debt-deflation process".

So, if the debtors go bankrupt, as happens in the course of debt deflation, the creditors find themselves having to bear the heavy losses in part through credit

[8] Minsky distinguishes three distinct income-debt relations for economic units (households, firms and financial institutions): hedge, speculative and Ponzi finance. The fragility of the financial system comes to depend on the relative weight which various positions assume within the economy: the greater the speculative and Ponzi units, the greater the likelihood that the economy is a deviation-amplifying system, prone to deflation spiral.

recovery and also due to the state of widespread insolvency[9].

2. Consequences of deflation and the liquidity trap

In this section I point out how can a liquidity trap and deflation arise all together, and why they pose special problems for policy makers. Deflation of sufficient magnitude may result in the nominal interest rate declining to zero or very close to zero (cf. Fisher's step (9)). Once the nominal interest rate is at zero, no further downward adjustment in the rate can occur, since lenders generally will not accept a negative nominal interest rate when it is possible instead to hold cash. At this point, the nominal interest rate is said to have hit the "zero bound". Since Central Bank conventionally conduct monetary policy by manipulating the short-term nominal interest rate (expansive monetary policy lower short nominal interest rate and this will lowers the short real interest rate- the nominal rate less expected inflation), when interest rate stands at or near zero, the Central Bank has "run out of ammunition" - that is, it no longer has the power to expand aggregate demand and hence economic activity.

Furthermore, with deflation and expectations of deflation, even a nominal interest rate of zero percent can result in a substantially positive real interest rate that is higher than the level required to stimulate the economy out of recession and deflation. In this situation, standard open-market operations by the central bank to

[9] Minsky's FIH extended Fisher's debt deflation process (Sau, 2015) to consider and show that, if the loss of confidence due to firms' bankruptcies (Fisher's point 5-6-7) deteriorates the banks' net-worth, panic phenomena may justify a run on bank deposits causing the default of banks and a breakdown in the financial intermediation process (self-fulfilling prophecies, as happended during the '30s). But this, in turn, can depress expenditure and lead to a further fall in aggregate demand, in the price level, and a further increase in the real debt burden and in the real interest rate: persistent negative effects on production, investment and employment, are at work! (Tobin, 1993; Palley, 1996, 2008; Wray and Papadimitriou, 2003).

expand the monetary base by buying Treasury bills lead the private sector to hold fewer Treasury bills and more money: when the "liquidity trap" occurs, expanding liquidity (the monetary base) beyond has no effect. If a combination of liquidity trap and deflation causes the real interest rate to remain too high, the economy may sink further into prolonged recession and deflation.

Nevertheless, it is worth noting that there are two approaches concerning with the "liquidity trap" and then regarding the suggested solutions and implementation of adequate economic policies (see next section). As remarked by Akram (2016, p. 25) "The divergence in proposed remedies arises indeed from the difference in the diagnosis of the cause of a liquidity trap".

The main cause of the liquidity trap, according to Krugman (1998a, 1998b), Bernanke (2000, 2002), and most mainstream economists, including Adam and Billi (2006), Eggertsson (2005, 2006, 2012), Woodford (2001, 2003), is that even if nominal interest rates are declining and the economy is going through deflation, the real interest rates may still remain high or could even rise: this hampers business investment and spending[10].

By contrast, as Kregel (2000) has shown, for Keynes a "liquidity trap" originates from investors' liquidity preferences. Keynes observed that when the interest rate is already quite low, investors would prefer to hold cash rather than bonds with duration risks because a small change in the interest rate would result in capital losses for investors. Again as Kregel (2000, p. 6) shows that "Keynes's definition of the liquidity trap will occur when even investors expect interest rates to rise more than the square of the current interest rate, for they will then prefer to hold money rather than bonds… and Keynes holds that the lower the rate of interest, the more likely that liquidity trap could occur". The liquidity trap arises from investors' liquidity preferences, which rise sharply if uncertainty about the future increases.

[10] As I shall discuss later, in this case the solution is to induce expected inflation through conventional and unconventional expansive monetary policy. This is in line with the reflation policies suggested by Fisher during the 30s. He also suggested the introduction of a tax on money, i.e. interest to be paid on bank reserves at a rate linked to the expected rate of inflation. Under deflation, this policy would allow negative nominal interest rates (i.e. a penality) on bank reserves, and allow the central bank to achieve the desired stimulating negative interest rate.

For Keynes and the Post-Keynesians, the solution to the problem of a liquidity trap is not solely or primarily monetary expansion in itself. The Central Banks may have indeed to lower the policy rate and undertake quantitative easing through extensive open market operations, but they outright reject the simplistic linkages between monetary aggregates, inflation[11], and nominal income as envisioned in the quantity theory of money.

Their view emphasizes expansionary fiscal policy and direct interventions to induce employment and investment to overcome the liquidity trap, without denying the importance of monetary policy actions (cf. Akram, 2016).

The solution in this case is, then, a policy mix between monetary and fiscal policies: the Central Bank has to act, not just to keep the short-term interest rates low, but also to keep the long-term interest rates low as a part of a program that affects the whole spectrum of interest rates and risk spreads (cf. Kregel 2000, 2014). That is, the Central Bank must also reduce the volatility of interest rates and the directional uncertainty about the path of interest rates, in so doing trying to convice the people that the potential of an upward shift in the yield curve has been minimized, and that the possibility of a sharp selloff in the government bond market has been contained.

Keynes (1936: 206; cited in Kregel 2000, p.8) holds that "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."

Targeting the yield curve and reducing interest rate volatility is a prerequisite for overcoming a liquidity trap. Keynes, and Post-Keynesians, are then moreover much skeptical as to whether low interest rates by themselves would induce investment, particularly amid heightened uncertainty, where the investors' expectations of future demand have diminished.

[11] Post Keynesian's theory of endogenous money and the modern monetary theory (i.e. neo-chartalists**)** indeed definitively breaks away and lead to reject any monetary policy that considers a "quantitative" dimension to monetary control of both deflation and inflation (see further section 3).

This mean that to revive the economy the need is for an integrated strategy consisting both in action by the Central Bank to reduce interest rates and interest rate volatility and appropriate public investment and employment creation programs that may restore business confidence (cf. Akram, 2016).

Another important consequence of the deflation process is that it creates not only a significant problem for those seeking to borrow but it places an even greater burden on the households and firms that had accumulated substantial debts before the onset of the deflation. This burden arises because, even if the debtors are able to refinance their existing obligations at low nominal interest rates, with prices falling they must still repay the principal in dollars of increasing (perhaps rapidly increasing) real value.

As I made a point of stressing in section 1, the debt-deflation school has shown that prolonged deflation can have severe negative consequences on output and employment. The real value of nominal debt rises, which may cause bankruptcies for indebted firms and households and, through liquidation of assets, a fall in asset prices. The commercial banks' balance sheets deteriorate when collateral loses value and loans turn bad, and financial instability may threaten. The financial distress of debtors can, in turn, increase the fragility of the nation's financial system – for example, by leading to a rapid increase in the share of non-performing bank loans or in default[12].

All these effects contribute to a further fall in aggregate demand, a further increase in deflation and a further increase in the real interest rate, and bring prices and the economy down in a deflationary spiral. Therefore, a liquidity trap with the associated risk of a prolonged recession or even a deflationary spiral is a central banker's "nightmare".

In this respect Minsky, as early as the '80s, was well aware that policymakers have to implement measures to avoid a debt deflation spiral *cum* liquidity trap. He labeled

[12] Japan in recent years has certainly faced the problem of "debt-deflation"--the deflation-induced, ever-increasing real value of debts. Closer to home, massive financial problems, including defaults, bankruptcies, and bank failures, have characterized the economies of Southern Europe like Italy's.

these policies as "Big Government" and "Big Bank". Following the observations by Wray in this connection (2003, p. 3): "countercyclical movement of the budget of the Federal government from surplus in a boom to deficit in a slump would stabilize income and profits". A rising deficit could potentially offset the effects of falling investment, helping to cushion every recession[13].

In addition to "Big Government," Minsky was also in favour of the intervention of what he called "Big Bank"— referring to the role of the Central Bank as lender of last resort (LLR). For Minsky, interest rate policy would not, *per se*, be a strong stabilizing force: raising rates in a boom would increase finance costs and hasten the transition to speculative and Ponzi financial positions; lowering rates in a slump would do little to encourage borrowing and spending if expectations were pessimistic[14].

The lender of last resort policy (LLR) was viewed by Minsky as essential—it would stop a bank run and would help to put a floor to asset prices, attenuating the debt deflation process discussed above. If the Central Bank lends to a troubled financial institution, it does not have to sell assets to try to cover demands by creditors for redemption. For example, if depositors are demanding cash withdrawal, in the absence of a LLR the bank would have to sell assets to raise the cash required; this is normally difficult for assets such as loans, and nearly impossible to do in a crisis. So the Central Bank lends the reserves to cover withdrawals: this implies either a refinancing process or easing the burden of the proximate refinancing organization.

In sum, the combination of Big Bank and Big Government helps to prevent a financial crisis from turning into a deep downturn and avoiding debt deflation forces (see Fisher's steps 2, and 7-8-9). The Big Government deficit puts a floor to falling

[13] As I will point out later, the opposite has unfortunately happened in the Euro-zone in current times due to the so-called austerity *dictum* in fiscal policies.

[14] Minsky remarked that most Central Banks since the '80s have reduced regulation and supervision, due to the predominance of the neo-liberal paradigm, easing the natural transition to financial fragility and financial crisis.

income and profits (see Kalecki, 1971), and Big Bank lending relieves the pressure on the financial markets (Minsky, 1982; 1986)[15].

3. Coping with deflation and the "liquidity trap": mainstream vs. post-Keynesian approach in the Euro-zone

The majority of contemporary mainstream macroeconomists are convinced that to contrast deflation and liquidity trap it is simply necessary and sufficient to reverse the policies that have been proven to be effective in preventing or eliminating inflation. As I pointed out in the previous section, the founding fathers on the analysis of deflation stressed that there are several reasons why deflation is not just inflation with the sign reversed: nominal interest rates are more apt to hit the zero floor when there is deflation, furthermore redistributions from debtors to creditors associated with unexpectedly high deflation in a world with imperfectly index-linked debt contracts is more likely to lead to default and bankruptcy than redistributions from creditors to debtors associated with unexpectedly high inflation. Default, bankruptcy and corporate restructuring are not just mechanisms for redistributing ownership and control of assets. These processes also destroy real resources.[16]

More conventional approaches (Buiter, 2003; Svensson, 1999, 2003a,b) recommend particularly, or even exclusively, the adoption of adequate monetary policies, but, as I shall try to show, in so doing they are still entrapped by the limitations of the quantity theory in which money supply is "exogenous" and can be manipulated in compliance with the inflation-target.

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[15] A good example of Big Government and Big Bank interventions was in the 1987 stock market crash. Both the Fed and the Government intervened, unlike response during the 30s, preventing recession from following upon the crash.

[16] Japan's experience provides a stark warning of the dangers of a liquidity trap and deflation. Japan has already lost a decade due to economic stagnation and deflation. Whatever the reasons for Japan's initial recession and stagnation, most observers of Japan's experience have concluded that the reason for the prolonged stagnation and deflation is due to policy mistakes and to an inability to take decisive and coordinated action to resolve Japan's problems.

These approaches separate the measure to avoid deflation *cum* liquidity trap, from the ones suggested to escape (sort-out) from it. As regards the first aspects, the most quoted is to set an explicit positive symmetric *inflation* target (say 2% per year), to prevent the deflation process and to give a sufficient margin to the rate of interest. Most Central Banks, like ECB, try to preserve a buffer zone for the inflation rate.

During normal times they try to avoid that unanticipated drop in aggregate demand will drive the economy into deflationary territory to lower the nominal interest rate to zero. Some authors (Posen, 1998) have indeed proposed the announcement of a sufficiently positive inflation target as a commitment to a higher future inflation rate. In line with the optimal policy of a future overshooting of the normal inflation target, this target should be higher than normal for a few years.

Instead of an inflation targeting, another possibility suggested is to set a target path for the price level in the future, perhaps rising at 2 percent per year. Svensson (1999; 2003) has suggested that prudent Central Banks should prepare in advance a set of emergency measures, to be used in the case of an imminent liquidity trap. The point is that announcing an inflation target or a price-level target will lower the real interest rate and be expansionary only to the extent that the targets are credible with the private sector.

In this connection, a critical post-Keynesian observation on these measures is that inflation is not a monetary phenomenon and cannot be targeted through the control of the money supply because the latter is "endogenous" rather than "exogenous" (Moore, 1988). This is a substantial theoretical difference between post-Keynesian and the mainstreamers concerning with money (fiat money!) and then to the effects of the monetary policies[17]. Furthermore for Post Keynesians inflation depend particularly on the weight of conflicting claims over the distribution of income. That is, inflation targeting has to explicitly acknowledge the demand-determined nature of

[17] As recently memarked by Wray (2015), Minsky, for instance, had adopted since 1957 earliest articles, what became known as the "endogenous money" approach that was revived by several Post Keynesians in the 1980s (see Moore, 1988). The endogenous money approach mostly concerns commercial bank activity— with banks creating demand deposits when they make loans to firms or households.

the real income generating process rather than focusing on the monetary aspects of the problem (cf. Davidson, 2006; Setterfield, 2006; Lima and Setterfield, 2008).

As regards the economic policy proposals suggested by the mainstreamers to *escape* from deflation and from the liquidity trap, they are certainly more problematic; they may be summarized as: 1) expanding the monetary base via open-market operations in Treasury bills and more financial assets; 2) reducing long interest rates by placing a ceiling on them[18] or with a commitment to maintain the instrument rate at zero for an appreciable period of time in the future (cf. Buiter, 2003)[19].

As pointed out in previous sections, since in a liquidity trap the nominal interest rate is constant at zero, the Central Bank can affect the real interest rate (i.e the difference between the nominal interest rate and expected inflation) if it can modify private-sector inflation expectations. If the Central Bank could "manipulate" private-sector beliefs, it would make the private sector believe in future inflation, the real interest would fall, and the economy would soon emerge from recession and deflation (cf. Svensson, 2003b).

The problem is that private-sector beliefs are not easy to act upon with monetary policies alone. If a Central Bank in a liquidity trap promises high inflation in the future, the private sector may doubt not only the ability or the will of the policy maker to achieve that future inflation, but particularly the fact that the level of future prices and inflation may depend, *sic et simpliciter*, on the announcement of an inflation target by the Central Bank. The Central Bank may be tempted to cheat, promising a high future inflation to get out of the liquidity trap, but once out, renege

[18] The Central Bank might announce explicit ceilings for yields on longer-maturity Treasury debt could then enforce these interest-rate ceilings by committing to make unlimited purchases of securities up to maturity at prices consistent with the targeted yields. If this policy were successful, not only would yields on medium-term Treasury securities fall, but (because of links operating through expectations of future interest rates) yields on longer-term public and private debt (such as mortgages) would likely fall as well.

[19] Because long-term interest rates represent averages of current and expected future short-term rates, plus a term premium, a commitment to keep short-term rates at zero for some time--if it were credible--would induce a decline in longer-term rates. In this conventional approach lower rates over the maturity spectrum of public and private securities should, in turn, strengthen aggregate demand in the traditional ways and thus help to end deflation.

on the promise and keep inflation low[20]. As Krugman (1998) pointed out, the problem is that this optimal policy may not be credible. Once the recession and deflation are over, the Central Bank may renege on its promise of a future expansion and instead keep inflation low and close to its target rate.

Since the standard policy tool of a lower short interest rate is neutralized by the zero bound, it is natural to look for other monetary policy instruments that can potentially demonstrate the Central Bank's commitment: the expansion of the monetary base**.** However, the precise mechanism through which an expanded monetary base will alter expectations is not altogether clear, and, again, depends on the ability of the Central Banks to modify private-sector beliefs! Therefore, an expansion of the monetary base would increase inflation expectations and reduce the real interest rate not only provided that it is seen as a permanent expansion but also on condition that it is able to manipulate private-sector beliefs, which may not necessarily be rooted in the quantitative theory, as these approaches seem to assume.

Although a deflation process cum "liquidity trap" poses unique challenges to monetary policymakers, Bernanke (2002, p. 2) seems rather optimistic when he declares "a Central Bank whose accustomed policy rate has been forced down to zero has most definitely *not* run out of ammunition,… a Central Bank, either alone or in cooperation with other parts of the government, retains considerable power to expand aggregate demand and economic activity even when its accustomed policy rate is at zero". The message is that if the Central Bank can no longer use its traditional means of stimulating aggregate demand it can implement monetary unconventional policies (see also Krugman, 1998a, 1998b;). Some of these unconventional proposals have been to conduct open market operations in long bonds as a way of reducing long interest rates. Indeed, even if short nominal interest rates are zero in a liquidity trap, long nominal interest rates need not be. The idea is that it is longer real interest rates,

[20] In fact, the situation can be described as one of multiple equilibria. If the private sector is pessimistic and expects deflation, the real interest rate will remain high and the recession and deflation will be longer. If the private sector is optimistic and expects deflation to be replaced by inflation, the real interest rate will be lower and the recession and deflation will be shorter.

rather than short real rates, that affect consumption and investment decisions. Thus, a reduction of long nominal interest rates could, all else being equal, reduce the long real rates and hence be expansionary and contribute to escape from the liquidity trap.

It is difficult to determine the scale of the open-market operation needed to reduce the long interest rate, because of difficulties in estimating the determinants of the term premium of interest rates (that is, the difference between long and short interest rates and its dependence on the degree of substitutability between short and long bonds). Even if the Central Bank were able to reduce long bond rates, this may not provide sufficient stimulus to the economy. That is, without the creation of long-term inflation expectations, the resulting long real interest rate may still prove too high.

Both Krugman's (1998a, 1998b) and Bernanke's (2000, 2002) solutions consist in making extraordinary monetary accommodation to tackle the deflation cum liquidity trap: a credible commitment to a continuous increase in the money supply and expansion of the Central Bank's balance sheet. Nevertheless, since Krugman and Bernanke neglected the role of "endogenous" money" they remain, as already anticipated, entrapped in the quantitative theory[21].

Indeed, Krugman (1998) has stated that the Central Bank should "credibly promise to be irresponsible," by which he means setting an higher inflation target than might otherwise be desirable. In principle, the Central Bank could expand the monetary base without limit[22], by continually buying domestic and foreign government debts, and if these are exhausted, other domestic and foreign assets. The problem is, again, why an expansion of the monetary base today should be viewed as a commitment to increased money supply in the future and whether this measure it is able to

[21] As pointed out again by Wray (2015) Krugman has stressed that banks cannot create credit "out of thin air": that is they don't really create higher purchasing power but simply move the power to those willing to use it (traditional intermediation process).

[22] Bernanke (2002), in this respect, points out that under a fiat money system the Central Bank should always be able to generate increased nominal spending and inflation, even when the short-term nominal interest rate is at zero. The conclusion that deflation is always reversible under a fiat money system follows from the quantitative theory of money: if the system falls into deflation a sufficient and necessary injection of money will ultimately and always reverse the situation.

manipulate private sector beliefs. As long as the "liquidity trap" lasts and the interest rate is zero, the demand for monetary base is perfectly elastic and excess liquidity is easily absorbed by the private sector. Krugman's (2010, p. 4) key policy proposal for the economy in a liquidity trap is for the Central Bank to credibly promise "to print more money in the future, when the zero lower bound no longer binds."

Mainstream macroeconomists have then made attempts to cope and come to terms with the deflation and liquidity trap, and have in fact made some progress, particularly as regards unconventional monetary policies. However, they are still entrapped by the limitations of the quantity theory of money, as is evident in the primary emphasis on monetary expansion to generate inflation in the works of Krugman (1998a, 1998b), Bernanke (2000, 2002) and the majority of macro-contemporaries. The key issue for them is to get the Central Bank to credibly commit to producing inflation[23]. If only the Central Bank could convince the public that it is committed to maintaining monetary expansion, inflation and inflationary expectations would be set aright. Proponents of this view believe that large-scale asset purchases can be a useful tool for lifting an economy from a depressed state and reviving growth.

Besides these theoretical shortcomings, it is worth noting that while most Central Banks (like the Fed) can buy and sell most general government securities and are permitted to buy or sell foreign exchange reserves, the ECB is not permitted to buy and sell private financial sector instruments such as corporate bonds or stocks, shares and real estate (other than their own offices)[24]. Furthermore, the ECB and the other members of the European System of Central Banks are not permitted to extend credit directly to the general government sector or to purchase general government securities directly, in the primary issue market[25]. The economically equivalent result can be achieved by the general government selling its debt instruments to the market

[23] Bernanke and Krugman hold that Bank of Japan was unable to do enough to generate inflation and reset inflationary expectations among the public and investors because it failed to convince the public that it would undertake a sustained monetary: inflation expectations stayed low, the real interest rate stayed high, and the deflationary pressures persisted.

[24] During the drafting of this paper many controversies have spawned on this topic.

[25] Neither do they have broad powers to lend to the private sector indirectly via banks, through the discount window.

and the Central Bank purchasing the same amount of general government debt in the secondary market (cf. Draghi's QE policy).

Nevertheless, although these monetary policies are necessary to keep interest rates low, they do not seem sufficient to be able to lift the Eurozone out of the deflation process. Actually, the ECB has recently endeavored to do its best to follow the kind of unconventional monetary policies discussed above, but neither quantitative nor qualitative easing (QQE) ha seemed able to seriously impact against deflation and stagnation in the Euro-zone (cf. fig. 1B; 2B).

The effects of low interest rates on private investments have been very small, since the private sector in many countries of the Euro-zone is again attempting to deleverage but not to borrow more (see charte in the appendix); the Treasury purchases by the ECB have simply amounted to an asset swap that reduces the maturity and liquidity of private sector assets but without raising private sector incomes. Also, advocating additional bank reserves has not enabled greater bank lending since the state of confidence on the part of the entrepreneurs/borrowers is still very low. Financial institutions provide indeed corporate loans only when there is a demand for such loans and when loans offers deem it is appropriate to extend such credit to entities that apply for such type of credit. The most fundamental shortcoming of QQE—or, in fact, of using monetary policy in general to combat deflation and recession—is that it only "works" if somehow or other it induces the private sector to spend more out of current income. Unfortunately, monetary stimulus alone has to date served above all to prevent the recession from becoming far worse rather than enabling significant economic recovery.

As in fact remarked by the PKs, in a liquidity trap, Treasury bills and money are virtually perfect substitutes, and open-market operations increasing private holdings of money and reducing private holdings of Treasury bills would have little or no effect on other asset prices and interest rates (cf. Kregel, 2000, 2014; Palley, 2013).

I have argued that the impacts of unconventional monetary policies, like QQE on private spending in the Eurozone, will come through effects on interest rates and lending activities by banks, but these were both very low. This also means that the German critics of the ECB who were concerned about inflation, arguing that today's monetary policies will cause inflation in the future because QQE will leave banks with massive quantities of reserves, were totally mistaken[26].

Some would have liked QQE to become some sort of "helicopter drops of money," (Turner, 2013), but this has clearly not come about; in the case of QQE, the ECB actions merely replaced Treasuries with reserves. While this might have had a small impact on interest rates, it did not induce much spending. From the discussion of interest rate elasticities above, it will be clear, following Keynes's skepticism on this topic, how very doubtful it is that such actions may have a decisive impact on aggregate spending also in the future.

The QQE announcement by the ECB had, at least temporarily, impacted on the euro since it has brought about an exchange rate depreciation. A currency depreciation may in fact stimulate an economy directly by giving a boost to net-exports. This means that, even if the nominal interest rate is zero, a depreciation of the currency offers a way to stimulate the economy out of the liquidity trap. More importantly, following the conventional wisdom, a currency depreciation and pegging the currency at a depreciated rate serve as conspicuous commitment to a higher price level in the future.

Once these measures are implemented, the currency depreciation and the lower real interest rate will increase aggregate demand, jump-start the economy, and increase output and employment[27].

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[26] Finally, given that the quantity of reserves banks are holding has no impact on their ability to create loans or to otherwise finance economic activity, there is in fact little economic necessity for the ECB to drain excess reserves even if inflationary pressures do build up.

[27] A direct currency depreciation has proven to be an effective tool for fighting deflation in the past. In this respect, Fisher (1934, p. 127) was in agreement with Keynes when, the day after a statement by Franklin Roosevelt concerning

Unfortunately, the simple version of the policy discussed above takes the rest of the world as given. For instance, it is assumed that interest rates and inflation in the rest of the world are more or less unaffected. If the country that follows the devaluation is too large relative to the rest of the world, this may not be the case. For instance, the shares of the Euro-area and the United States are about 21 and 33 percent, respectively.

This may prove to be a problem since escaping a liquidity trap through currency depreciation may have negative consequences for the trading partners in a global perspective and promote some sort of "currency wars" (Sau, 2014). In fact, when a country attempts to stimulate its economy by depreciating its currency, this is often called "competitive devaluation" or a "beggar-thy-neighbor policy," and may be associated with negative consequences for trading partners[28].

Since conventional and unconventional monetary policies have proven unable to lift the euro-zone out of a deflation and liquidity trap situation, in my opinion it is in fact necessary to consider a policy-mix closer to the post-Keynesian perspective (such as Kregel, 2000, 2014, Wray and Papadimitriou, 2003, Palley 2009, 2013, Fullwiler and Wray, 2010), that looks back to Keynes and/or to Minsky as the founding fathers on the topic.

As stressed in section 2, Keynes emphasized fiscal expansion and direct employment creation by the public sector (even if he did not neglect supportive monetary policy) as well as boosting business confidence. These measures would in fact increase the investors' expected marginal efficiency of capital and promote an increase in aggregate investment. In Keynes's view, in the context of a liquidity trap, fiscal expansion along with an expansive accomodative monetary policy lead to a higher

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the policy that promoted a 40 percent devaluation of the dollar against gold, he said: "The President is magnificently right". This policy was enforced through a program of gold purchases and domestic money creation. The devaluation and the rapid increase in money supply it permitted ended the U.S. deflation remarkably quickly. Indeed, consumer price inflation in the United States, year by year, went from −10.3 percent in 1932 to −5.1 percent in 1933 to 3.4 percent in 1934."

[28] There is a further, final issue to address regarding currency depreciation as a way to escape from the liquidity trap. A policy that calls for depreciation relative to the rest of the world can work for the United States, or the Eurozone, but if both the regions were simultaneously to fall into a liquidity trap, they could not both simultaneously depreciate against each other.

level of output with little if any increase in the interest rate. This may in fact limit the effect of "crowding out" of private investment. In this case, public-sector investment and direct public-sector employment programs can boost growth, reduce uncertainty, and restore entrepreneurs' confidence. These solutions are in compliance with the idea of Big Government proposed by Minsky (1986) as a policy against deflation.

In this respect, it is worth pointing out that policymakers in the Eurozone have undertaken, exactly and paradoxically, the contrary of what was suggested by both Keynes and Minsky, since they adopted contractionary fiscal policy under the rubric of so-called fiscal austerity (cf. Stiglitz, 2016). During the past ten years, these authorities have tried to raise taxes and cut public spending but, in so doing, they have hampered effective demand, investment and consumption. Business confidence, in turn, has been weak, as reflected in the European firms' reluctance to increase domestic fixed investment. Last but not least, the European authorities have not pursued direct employment policies. The unemployment rate in Europe has been high, particularly in comparison with other advanced countries, but the labor market has seen various structural changes, such as increase in the share of part-time employment, corporate restructuring, de-unionization, the decline of manufacturing employment and globalization, and a decline in the overall size of the labor force and the labor force participation rate. The downward flexibility in wages and prices witnessed in Europe during the past decades has aggravated deflation and has not helped boost the sagging rate of employment. The dominant paradigm is in fact inflicting ultra-austerity and aggravating the situation yet further. By erroneously blaming the EU crisis on profligate states and imposing a crash diet of fiscal cuts on many countries, they have made the problem of private and public debt even worse (cf. Stiglitz, 2016). The policy is self-defeating in broader economic terms. Indeed, with income declining, fiscal positions worsened as tax revenues decreased and transfer payments grew larger due to rising unemployment during the crisis (cf. Mastromatteo-Rossi, 2015, and Fig. 2B).

Following the PK approach the Euro-zone need instead urgently to promote public investments and direct job creation to dampen the negative real effects of deflation and stagnation in this area. PKs economists also have acknowledged that accomodative monetary policies are a vital component of a complementary strategy, not only, to combat deficiency in effective demand and to keep interest rates low but, most importantly, they have stressed the relevance of enforcing the reduction of interest rate volatility and targeting the yield curve, to avoid a liquidity trap. [29]In the same time, a rise in the aggregate of employees' real income as well as an increased transfer payments (directly aimed at households and the unemployed) and increased public spending to sustain aggregate investments are necessary for strong and sustained economic growth in Europe. That is exactly the opposite of the line taken with the austerity plan inspired by the neoliberal paradigm.

But the central contradiction of Europe's debt crisis strategy is linked, paradoxically, to some sort of debt deflation bias: if many countries are forced to cut wages and prices to claw back lost competitiveness against Germany through 'internal price devaluations', this frustrates the other objective of controlling the debt, as deflation increases the debt burden, aggravating the situation. The EU authorities would do well to read the founding fathers's contributions on the argument and other PK authors of the debt deflation school. The central argument should by now be self-evident: if the price level is falling or the actual inflation rate is lower than the rate of inflation that was expected when debt contracts were made, the real burden of the debt keeps rising.

Furthermore, attacking some of the structural problems (for example, in banking activity) along the wrong lines could exacerbate and further aggravate demand problems and prove self-defeating once again. For example, attempts to 'clean up' the banks can lead to a further squeeze on credit supply, precipitating an economic downturn and making bank balance sheets even worse.

[29] This is remarked particularly by Kregel (2011) since he shows that Keynes in his Treatise was an early advocate of unconventional monetary policy, arguing for extraordinary measures and highly accommodative monetary policy, including very low interest rates and large-scale asset purchases.

At the level of proposing economic policies to get away from the current deflation bias, we may observe that the only way to break out of the impasse is to let inflation drift up a little, with rising wages in Germany, without forcing other countries into a hopeless deflationary spiral. France, Italy and Spain should combine their forces in the ECB's governing council and assert the appropriate terms to push through the reflation policy that the area so desperately needs.

As remarked in this paper, the European situation is further complicated by the introduction of an institutional neoliberal design with the euro, and by the lack of a federal fiscal policy (cf. Stiglitz, 2016). These aspects urgently suggest implementing new policy design in the Eurozone. Rather than pursuing ill-advised fiscal austerity programs, Europe needs to undertake appropriate reforms in its governance.

Conclusions

Aborting or escaping from deflation and the liquidity trap poses unique challenges for policymakers. Nevertheless, deflation can be prevented and, if it has taken hold, can be overcome with co-ordinated actions by the monetary and fiscal authorities. In this connection, Minsky (1982, 1986) points out the role and the activity of lender of last resort (LLR) performed by the Central Bank and of expansive fiscal policy through Big Government interventions to sustain profits and promote investment. Deflation can be extremely damaging to a modern economy and should be staunchly resisted. Unfortunately, for the foreseeable future, the chances of serious deflation in the Euro-zone again appear all too strong, largely because of our economy's underlying scant depth, but also because the ECB is alone in confronting a real policymaker's "nightmare".

As I have showed, monetary policy alone cannot prevent or cure deflation in a liquidity trap situation, if one restrict himself to conventional monetary policy, that is,

through a reduction in the risk-free short nominal interest rate; but monetary policy alone is unlikely to prevent or cure deflation even if the monetary authority is willing and able to "monetize" (i.e. create liquidity through public asset purchases), if necessary without limit, the outstanding stock of public debt (short, long, nominal or index-linked), and/or perform open market purchases of a wide range of foreign and private domestic securities as suggested by by Bernanke (2002) and Krugman (1998). As the data show for the Euro-zone up to date, also unconventional monetary instruments seem to be insufficient to reflate the economy and to lift the area out of stagnation.

In this paper, I have sought to show how economic policy makers in the Eurozone may limit the effects of a deflation spiral cum liquidity trap only through a combination of monetary and fiscal policies along the lines depicted by the PK approach. Only a large-scale, expansive program of public investments and increase of public spending coordinated by the Governements and financed through issues of Eurobonds by the European countries, along with continuation of the current QQE adopted by the ECB to maintain low interest rates, may be able to promote growth and employment in the Euro-zone.

To say that deflation can be avoided or cured using unorthodox monetary and fiscal policies is not to say that all the economic problems faced by a deflation-afflicted economy – like the Eurozone – can be solved at present. Unfortunately, current fiscal economic policies promoted by the austerity program are in fact exactly the contrary of what is needed to emerge from deflation. Furthermore, the European banking sector has been paralysed by a massive overhang of bad debt. Other financial intermediaries, especially insurance companies, are suffering the cumulative impact on their balance sheets of the most spectacular asset boom and collapse in modern history, linked to the American sub-prime securities.

As I have discussed in this paper, a variety of policy responses are available looking back to both Keynes and Minsky, and aiming both to avoid and to escape from

deflation and the liquidity trap. Because some of these alternative policy tools have had scant airing within academia or indeed outside it, they may raise practical problems of implementation and of calibration of their likely economic effects.

The PK perspective may offer a fuller understanding if applied when analyzing the causes of Europe's appropriate policy measures for reviewing growth: keeping interest rates low and mitigating interest rate volatility through monetary policy actions and targeting the yield curve, along with countercyclical and activist fiscal policies, proactive employment policies (including direct public-sector employment and state-backed private-sector employment- employer of last resort-**)** and efforts to raise the expected marginal efficiency of capital, would be appropriate for the Eurozone.

With conventional and unconventional monetary policies nearly exhausted, further effective anti-deflationary policy requires the co-operation of the ECB and the Eurozone Ministries of Finance in the design and implementation of the above-mentioned co-ordinated monetary-fiscal stimulus. So far, the economic policy debate has proved very far from arriving at a solution, for this persistent unwanted deflation is always and everywhere evidence of unnecessary, avoidable macroeconomic political mismanagement.

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Appendix-Figures

FIG. 1A

This figure shows that the Eurostat index of total inflation (year over year) started to decrease since the end of 2012.

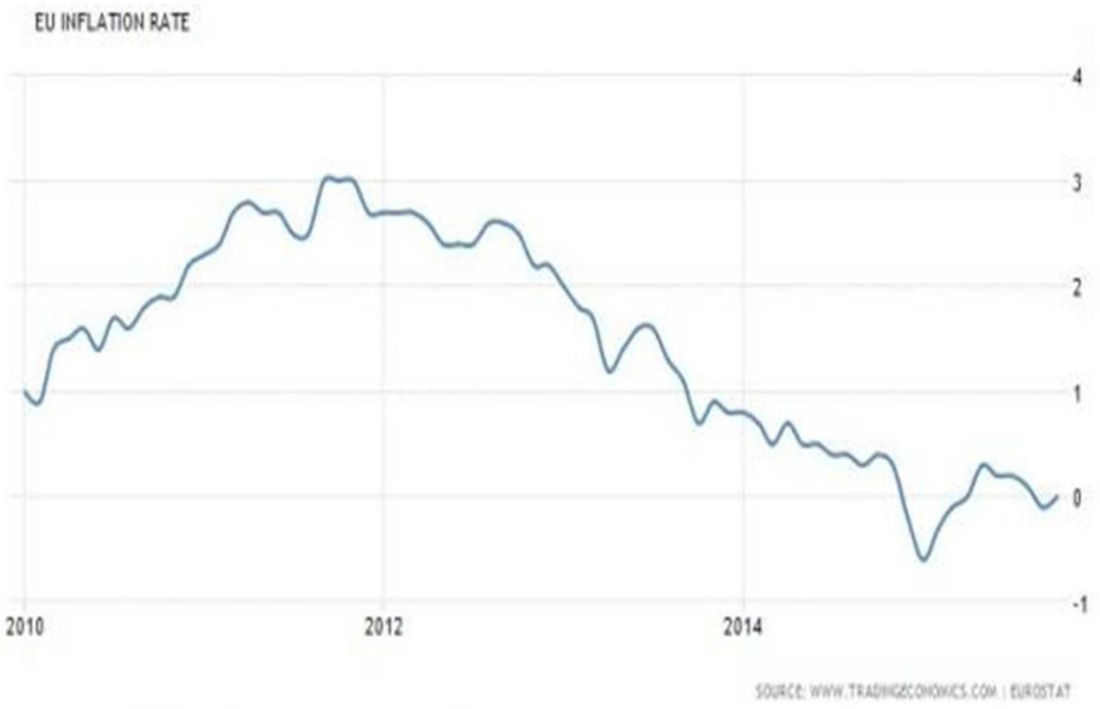


FIG. 1B

This figure shows that inflation has dropped to -0.6% on Janary 2015, which is way under the European Central Bank (ECB) target, close to 2%.

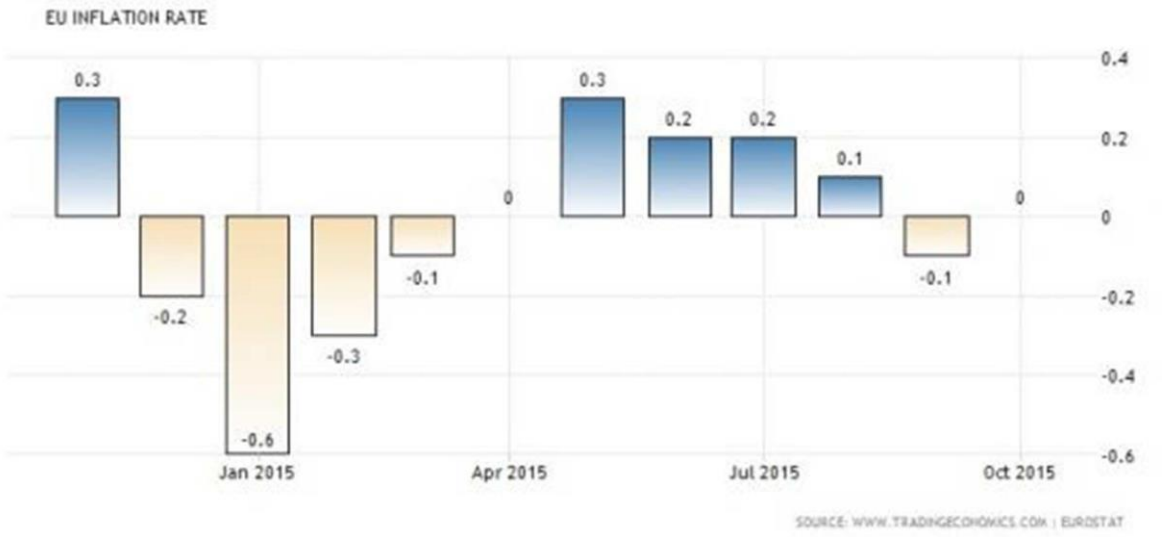


Fig. 1C.

This figure shows the Euro area annual inflation up to 2017 and its main components

(January 2007-May 2017)

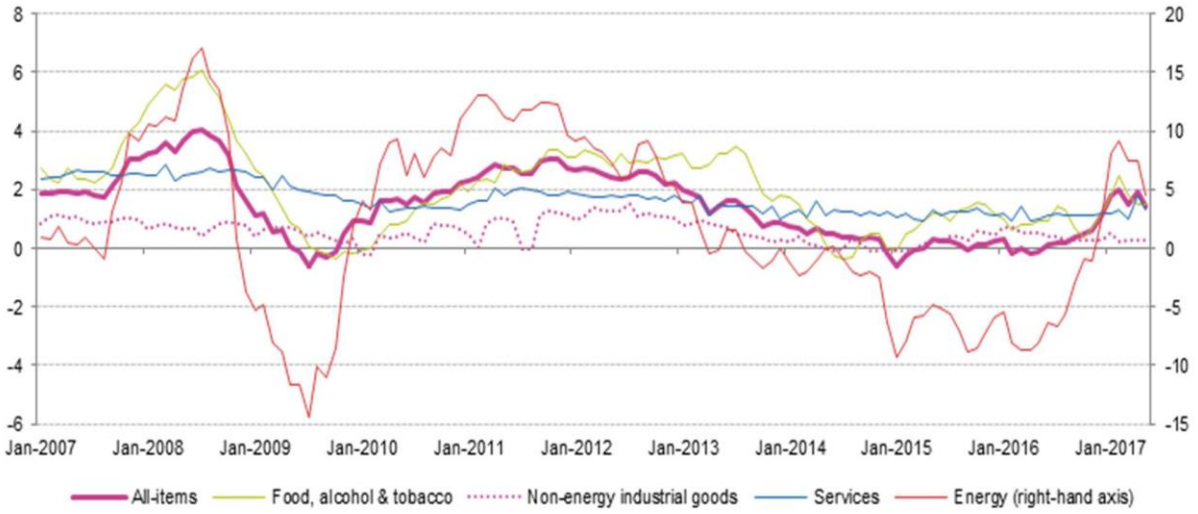


FIG. 2A

Quantitative Easing and lending activity – ECB Bank Lending Survey

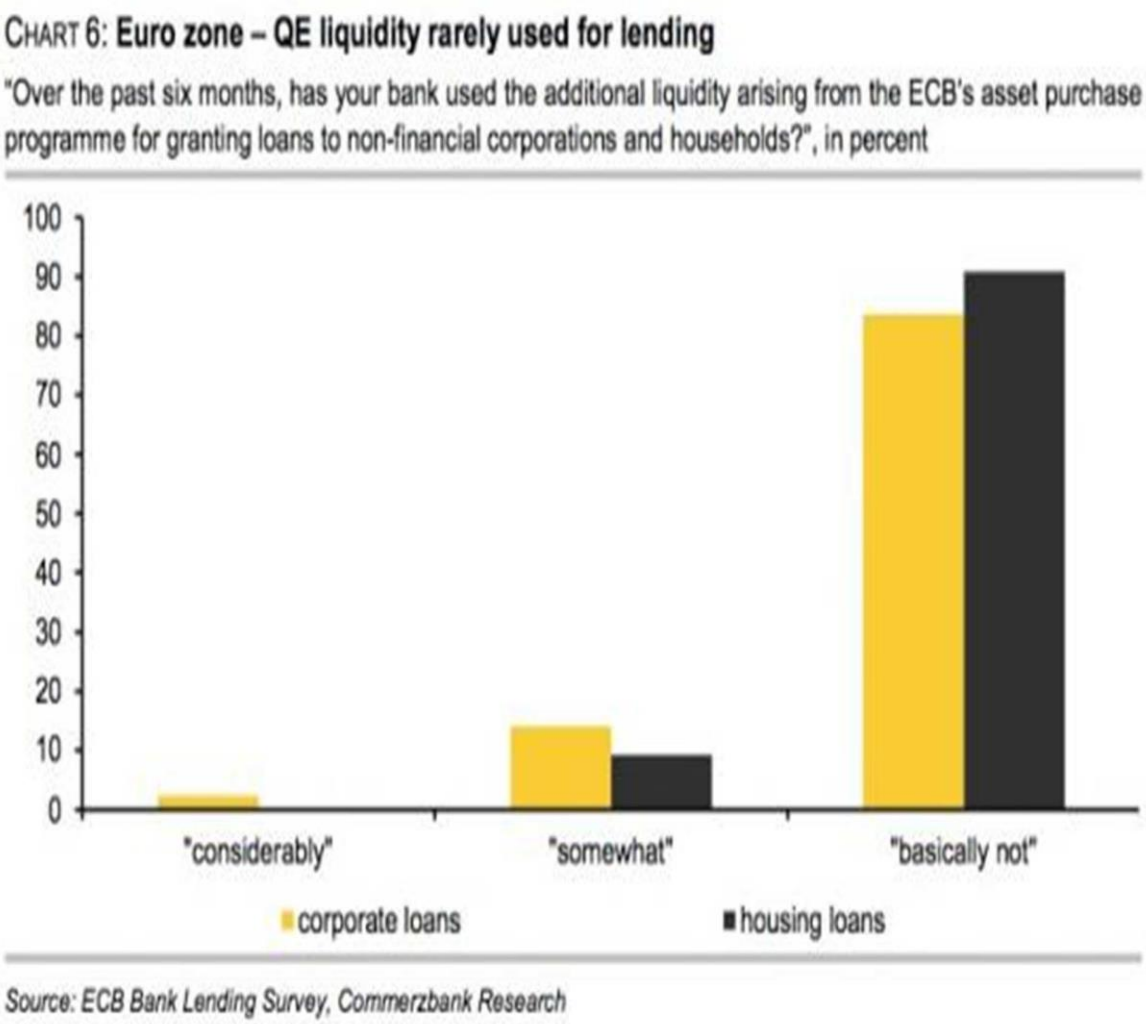
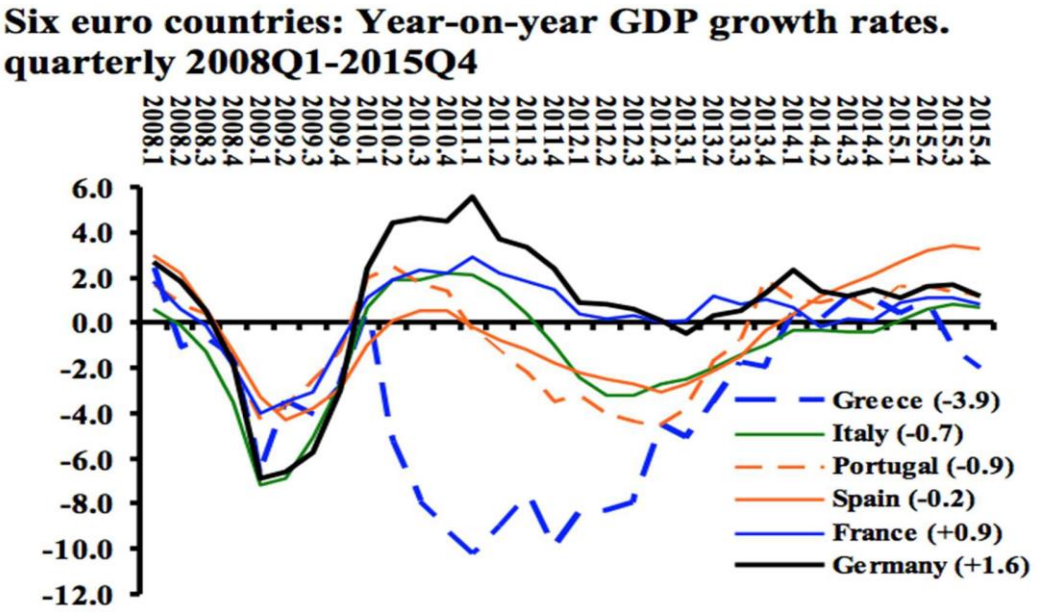


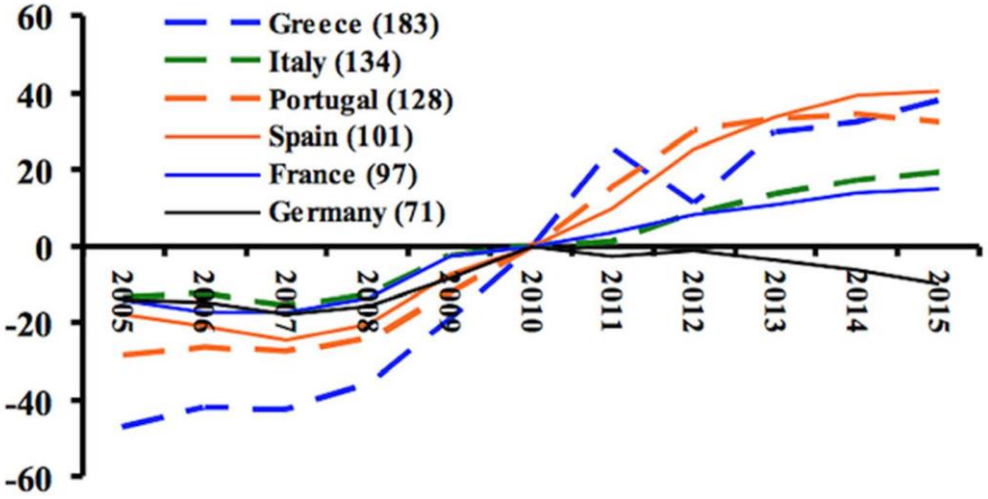
FIG. 2B



Note: The growth rate for each quarter is the change compared to the same quarter, previous year. Numbers in the legend are the average 2010-15.
Source: OECD.

Fig. 2C

Six euro countries: Maastricht Measure of Gross Public Debt, % of GDP, percentage point difference from 2010 (2005-2015)



Note: For each country Maastricht measure of gross debt as share of GDP in 2015 given in legend.
Source: OECD