

# The relevance or irrelevance of asset purchase programs

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This essay analyzes the effectiveness of central bank asset purchase programs pointing out their quasi-fiscal nature. By neglecting this channel, as in the portfolio balance theory, their benefits can only be exaggerated. By including this channel, instead, there can be positive effects on inflation and output only if the private sector experiences a wealth gain and thereby, on the opposite side, the government (treasury and central banks) retains losses. An impossible trinity arises for the central bank among setting freely conventional monetary policy, being financially independent from the treasury and choosing an arbitrary composition of the portfolio of assets. In general, asset purchase programs do not represent a new style of conducting central banking and should be abandoned in normal times.

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## 1 Introduction

This essay analyzes the effectiveness of certain unconventional monetary policies— namely Large Scale Asset Purchases (LSAPs) programs— recently implemented by many central banks around the world. The perspective is on the transmission mechanism pointing out their quasi-fiscal nature.

LSAPs involve central banks buying long-term securities issued either by the private sector or by the treasury.<sup>1</sup> The key aspect of LSAPs is the unconventional nature of the purchased securities with risky features as opposed to risk-less, short-term securities characterizing the classical composition of a central-bank balance sheet. There is a double component of riskiness: securities can have credit risk, because the issuer can seize them, fully or partly through default, and/or securities can be subject to interest-rate risk and therefore their market price can vary depending on the expectations of future short-term rates and term premia.

## 2 Irrelevance of LSAPs

The most popular narrative for why these asset purchase programs have an effect on the economy has nothing to do with their fiscal effects. I will argue below that by neglecting the fiscal effects their benefits can only be exaggerated.

The popular narrative, the so-called portfolio-balance theory, suggests that purchases of long-term securities are effective because they alter supply in some markets leading to counterbalancing effects through prices and returns which cause spillovers in other markets.

Let us think about a central bank that purchases securities of type X. These purchases reduce the supply of securities X in market X. As a consequence, the resulting excess demand increases the price of the security and lowers their return. At the same time, previous owners of securities X should be in the position to reshuffle their portfolio according to

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1 This form of unconventional monetary policy is often called Quantitative Easing (QE), although QE defines more properly policies that increase the liabilities of the central bank’s balance sheet regardless of the asset composition.

their desired risk/return profile. This reshuffling will create excess demand in other security markets lowering their returns. The cascade of adjustments will eventually spread with the final effect of lowering interest rates and premia in several money and bond markets and to even depreciate the exchange rate.

However, the described mechanism completely neglects the fiscal consequences of the action of the central bank which can indeed even neutralize the overall effect.

First, we note that by purchasing long-term securities, the central bank alters the allocation of risk in the economy. In particular, it takes some risks off the hands of the private sector and put them on its balance sheet. The key question to ask is what will happen when this risk materializes in the hands of the central bank. In the case of a credit event, for example, it can produce losses that impact directly and negatively on the income of the central bank which is the way through which purchases of risky securities can have fiscal consequences. Indeed, in general, central banks rebate all profits to the treasury and, therefore, in the case of lower income, they deliver lower remittances to the treasury. If the treasury covers the missing revenues by increasing taxes on the private sector, the central bank's losses are then transferred to the private sector.

In the case the central bank's gains or losses are transferred to the treasury and the treasury transfers them back to the private sector, risk does return at the end of the day to the private sector which ultimately bears all losses or eventually gains. It is like those securities never exited the border of the private sector. How is it then possible that the central bank's purchases can produce any effect on the economy? If the above transfers mechanism is in place, they shouldn't. Total wealth of private sector has not changed. The financial wealth did change because of the different composition of the portfolio but this variation is completely offset by a change in human wealth since net income is lowered because of higher taxes.

Considering that total wealth of households has not changed, then there is no reason for them to change consumption choices. Therefore, inflation and GDP should not vary because there are no movements in aggregate demand.

This is a striking result which generalizes Wallace's (1981) irrelevance theorem to a context in which central banks buy risky assets and money is dominated in return by risk-free bonds (see Eggertsson and Woodford, 2003). Open-market operations of any form are irrelevant meaning that they do not produce any effect on the equilibrium allocation in terms of GDP and inflation. But, then, why do we see central banks making an extensive use of these instruments? Is there any hope that they can have some of the desired effects?

### 3 Relevance of LSAPs

Following the reasoning above, one should find a way to break the mechanism that neutralizes the overall impact: that is, the risk should stay in the hands of the central bank or at least in the hands of the whole government (central bank and treasury) so that when it materializes, the private sector experiences a change in total wealth, raises consumption and therefore shifts aggregate demand, which in turn moves prices. In this case, LSAPs can have an inflationary impact and positive output effects.

There are two transfer channels of the irrelevance mechanism underlined above: (1) losses or gains of the central banks are transferred to the treasury; (2) lower or higher remittances from the central bank to the treasury are covered by higher or lower taxes levied on the private sector.

Let us first focus on the first channel to see what the most common central bank practices are. One interesting case of complete transfer of losses and gains from the central bank to the treasury is the one put in place by the Bank of England which, in light of its LSAPs program, created a financial subsidiary jointly owned by the central bank and treasury with

the purpose of purchasing the unconventional securities using a credit line issued by the central bank. The critical aspect of the joint subsidiary is that gains or losses due to asset purchases are entirely borne by the treasury. According to this mechanism, the central bank is fully supported by the treasury and indeed its losses are passed to the treasury. If the treasury passes them to the private sector, there will be a neutrality result.

In the U.S., on the contrary, the treasury is not allowed to recapitalize the central bank. Whenever it experiences losses, the Federal Reserve has to rely only on internal resources to restore initial net worth. It can indeed stop paying remittances to the treasury and retain earnings to pay past losses. Once all losses are recovered, the central bank returns to the usual business of paying remittances to the treasury.

## 4 Buy assets of dubious credit worthiness

The U.S. case is an interesting one since it can deliver a neutrality or a non-neutrality result depending on the magnitude of the central bank's losses. On the one hand, the central bank has still the possibility to transfer losses to the treasury across time, because of the zero remittances when the positive income is retained to pay past losses. If this happens to be the case, the central bank can bring the materialization of risk out of its balance sheet by lowering over time remittances to the treasury. If the treasury passes back these losses to the private sector, then there will be another neutrality result.

However, on the other hand, it might also be possible that the central bank is unable to transfer all losses to the treasury even over time. For this to be the case, losses should be quite significant to impair the profitability of the central bank and its solvency. For example, if losses are such to bring the level of net worth to a negative number and up to the point at which the overall position on non-interest bearing securities (currency and net worth) of the central bank is negative, then the central bank loses its profitability and cannot recover from past losses in the current conditions (inflation and output). To return profitable, the central bank must increase the level of non-interest bearing liabilities (net worth or currency). Net worth cannot rise because the treasury does not recapitalize the central bank, therefore money holdings should increase. But how is it possible to raise money holdings? Well, inflation is the way to go since it increases private sector's need of money for transaction purposes. The increase in money holdings raises the level of non-interest bearing liabilities of the central bank and works to restore profitability. Note that this adjustment mechanism is consistent with the fact that losses are kept in the central bank's balance-sheet with risk that has been taken out of the hands of the private sector which therefore benefits of a positive wealth effect. This translates into higher demand which in turn pushes prices and inflation up consistently with the need of the central bank to restore profitability.

Note that it is not necessary that the central bank experiences losses in the current contingencies but it is sufficient that there is some contingency in the future, which does not even materialize in the history, in which the central bank suffers significant losses. Indeed, in this contingency, inflation will pick up and, considering economic models with forward-looking features, then the rise in future inflation will create positive feedback effects into the current outlook for inflation and output.

Therefore, we have here a first case of relevance of LSAPs provided two conditions are met: (1) the treasury should not cover losses of the central bank, (2) losses should be significant to impair the profitability of the central bank.

The prescription from theory is therefore to buy assets of dubious credit worthiness. But, this is not the way central banks went. Indeed, the scheme underlined above rests on the fact that the central bank is in some way willing to take losses on its balance-sheet and let its net worth to substantially fall up to the point that profitability is impaired. In this case, central bank may be easily questioned by the parliament or the public because they

did put their solvency at risk. Although *ex ante* the treasury is not supposed to recapitalize the central bank, *ex post* it may offer support which could possibly undermine central bank's independence. Last but not least, the public may be afraid to hold the currency issued by the central bank due to its insolvency risk and may find devices to substitute it with other currencies. Such a confidence crisis might lead to disappearance of currency or the appearance of non-central bank backed currencies (like bitcoin). One example of the former was the florin in the late eighteenth century whose solidity was jeopardized by the risky lending exerted by the Bank of Amsterdam to the East India Company (see Quinn and Roberds, 2014).

## 5 The impossible trinity in monetary economics

All these considerations point toward the conclusion that central banks might want to avoid these risky territories to preserve their financial independence from the treasury.

But here there is an interesting trilemma. The impossible trinity in monetary economics: Central banks cannot be at the same time financially independent, target independent and freely choose balance-sheet policies:

1. Financial independence means the willingness to avoid recapitalization by the treasury and at the same time to avoid significant losses and prolonged periods of net worth's reduction.
2. Target independence is the ability to set the inflation target independently of other conditions or in general the way to conduct conventional monetary policy.
3. Independence of the balance-sheet policies means the ability to set arbitrary the composition of the central bank's portfolio of assets independently of the credit worthiness of the issuer or duration of securities.

The impossible trinity works in this way. A central bank that engages in purchases of unconventional securities, thereby making potential losses, and wants to keep its financial independence should change its conventional monetary policy stance in a way to prevent income losses and net-worth reduction. Then, it cannot at the same time achieve target independence.

Also, a central bank that strives to maintain target independence and engages in unconventional purchases could experience losses, even significant ones, affecting its profits and net worth. It thereby eventually may have to be supported by the treasury. Then, it cannot be financially independent.

Finally, a central bank that wants to maintain target independence and financial independence has to restrict its choice of balance-sheet policies to mostly riskless securities.<sup>2</sup> It cannot have any compositions of its balance-sheet.

This impossible trinity is interesting since it reveals another non-irrelevance result. A central bank that engages in purchases of risky securities and wants to maintain financial independence has to change its monetary policy stance. In other words, purchases of long-term securities and commitment to financial independence signal a change in conventional monetary policy which has implications for inflation and output.

Therefore, we have found two cases of relevance of LSAPs. Either the central bank is willing to take large losses on its balance-sheet or it is determined to avoid these losses.

There is one critical observation to make at this point. The bottom line of a non-neutrality result is that, at the end, it should come through a change in the conduct of conventional monetary policy. But, could it not be the case that this change can be achieved without unconventional open-market operations? The sad answer is yes. If the central bank wants to vary conventional policy, after all, they should just do it and communicate to the public in

<sup>2</sup> Foreign reserves can be as well subject to capital gains or losses.

the most transparent way. Indeed, if the central bank could credibly commit and implement optimal inflation targeting policy, then unconventional purchases are really unnecessary. Alternatively, with lack of commitment, they could be used to signal a more expansionary monetary policy stance like a longer sojourn at zero interest-rate policies.

## 6 The treasury's role

Let's now go back to the two channels of the neutrality mechanism described above since insofar I have been only focused on the one between central bank and treasury and taken as granted that the treasury is passing profits of central banks to the private sectors or covering losses by raising taxes on the private sector. This second channel, between treasury and private sector, reveals the quasi-fiscal nature of central bank's LSAPs.

Suppose we are in the case in which the central bank is passing all gains or losses due to LSAPs to the treasury. In turn, the treasury could decide to pass or not these gains or losses to the private sector. This decision could be critical for the effects of targeted LSAPs on the economy. As already discussed, a neutrality result arises when the treasury passes all gains and losses to the private sector. But what is going to happen when the treasury retains losses or gains in its balance sheet? We are then in a situation in which the private sector holds more safe securities and the central bank holds risky assets. If risk materializes, the private sector experiences a gain, while the treasury retains losses that lead to an increase in aggregate demand which in isolation pushes prices and output up. Therefore, differently from the two cases of non-neutrality discussed earlier, here it is the treasury rather than the central bank that keeps losses in its balance sheet or tries to avoid them.

This brings us to point out an equivalent role that fiscal policy has independently of the unconventional action of monetary policy. Fiscal policy could influence equilibrium through a similar mechanism. It could make a transfer to the private sector through a reduction in taxes so that the private sector experiences a permanent wealth gain that pushes up consumption and aggregate demand. The key aspect is, however, how the tax cut is financed. If it is financed by issuing bonds to the private sector, then there could not be wealth effect since it is possible that private sector understands that the cut is not permanent and will be reversed by higher taxes. An alternative, what has been called helicopter money, is that these financing needs are covered by purchases of government debt by the central bank which are financed by issuing monetary base in a permanent way and surely well beyond the stay of the economy at the zero lower bound. In this way, the wealth effect is going to be consistent with an inflationary path. However, there are other ways through which one can achieve the same outcome. For example, a permanent QE policy that raises the monetary base and transfers all profits of the operations to the treasury can achieve the same effects as helicopter money.

All these observations point towards the need of some coordination between monetary and fiscal authority to achieve a certain outcome. Indeed, taking literally the proposal of helicopter money as a money financed tax cut, the lead of the action is here from fiscal policy but the financing support should come from monetary policy. On the contrary, given that central banks are already implementing QE policies, independently of what the treasury does, the treasury could exploit them in order to finance a tax cut by issuing more bonds to be held by the central bank. In the aftermath of the financial crisis, some of the tax-relief policies that have been implemented around the world may have found justification along the same line of reasoning. However, to qualify as helicopter money, QE should be permanent and surely well beyond the duration of zero-lower bound policies.

## 7 Central bank independence

Let me finally come back to the problem of independence of the central bank from a slightly different perspective. Nowadays, central banks have an inflation-targeting mandate and an important issue in monetary economics is to define how to set their instruments in a way to achieve the desired target on a certain medium-to-long horizon. In this direction, the main question to address is whether unconventional purchases can jeopardize the achievement of the final objective of the central bank. Here again the important distinction to consider is the presence or not of treasury's support. In theory a central bank is able to uniquely achieve a determined target for inflation if the following three conditions are met: it has enough capital to start, it holds only risk-less securities in its portfolio, it transfers all income (which under a conventional composition of the balance sheet is positive) to the treasury. A central bank with these characteristics will be financially independent from the treasury, except for the initial injection of capital, and can defeat any deflationary or inflationary spirals by relying only on its own resources.

When instead the central bank starts to purchase risky securities, it can still defend and achieve any desired inflation target provided, however, that there is financial support from the treasury. This support can create dependence between central bank and treasury, a state that a central bank may want to avoid but at an important cost. If the central bank starts to purchase long-term securities and wants to be financially independent from the treasury, then it might be subject to self-fulfilling inflationary spirals or in general to multiplicity in which the desired equilibria with stable inflation coexists with inflationary paths. Under the same conditions, credit events or simply the expectations of credit events can even exacerbate the development of self-fulfilling inflation or induce deflationary spirals. Furthermore, they can completely challenge the achievement of the inflation target.

Restating the impossible trinity, the prescription is to have a central bank with a traditional asset composition. Otherwise, treasury's support is needed if the central bank buys risky securities.

## 8 Concluding remarks

Asset purchases of risky assets bring monetary policy into risky territories. In particular, as balance-sheet grows and central banks become closer to financial intermediaries (a gigantic one), and as the fiscal consequences of their action become more evident, the appointment of a governor of a central bank who is sitting on balance-sheet of a size multiple of the country's GDP will likely to be driven by non-technical considerations perhaps related to who is going to be more prone or against these quasi fiscal actions. All these considerations might indeed distract the standard job of monetary policy.

The conclusion to draw from this analysis should not point much toward minimizing the importance of these quasi-fiscal monetary policy actions in certain adverse contingencies – although they seem to be just a desirable way to signal the escape from suboptimal monetary policy. What should not be defended is the view that there is a new style of doing central banking through unconventional policies out there that should be adopted moving forward to normal times.

Be old style, learn how to better communicate inflation-targeting procedures seems the way to better achieve inflation-targeting goals even during liquidity traps.

## 9 Related literature

This essay is based on the analyses of Benigno (2016) and Benigno and Nisticò (2015). It is related to a recent literature which, by emphasizing the separation between the balance sheets of central bank and treasury, has pointed out the important role of transfers between

treasury and central bank and the solvency conditions of the central bank. See Bassetto and Messer (2013), Del Negro and Sims (2015), Hall and Reis (2015) and the early work of Sims (2005). The reference literature on the irrelevance of open-market operations includes among others the works of Wallace (1981), Sargent and Smith (1987) and Eggertsson and Woodford (2003). Sargent and Wallace (1981) is also an important reference for the analysis of the interaction between monetary and fiscal policies.

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