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Comment of “Non-Neutrality of Open-Market Operations”

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Comments on:

Non-neutrality of Open-Market Operations

(Pier Paolo Benigno and Salvatore Nisticò)

By David Archer¹

Benigno and Nisticò have a nice paper that contributes to our understanding of central banks in two areas: the consequences of unconventional monetary policy operations, and the relevance of the central bank's independent budget constraint. Bringing these two together, they show that central bank unconventional policy actions may affect the economy's equilibrium. Their particular contribution is to show that similar conclusions from recent partial equilibrium analysis also hold in general equilibrium.

I want to focus particularly on the issue of the relevance of central bank finances. My basis for doing so is work that we have done on that question at the BIS with various central banks.

Up until quite recently something akin to an irrelevance proposition seemed to hold among central bankers with respect to their own finances (their P&L, their equity). The proposition is that central bank's finances are *essentially irrelevant* on a macro scale. Minor distributional consequences might be acknowledged, but small ones by comparison with the distributional effects of the policy actions that affect, as a by-product, central bank P&L – and those are either mostly in favour of the poor or too small to warrant factoring into decisions.

What lies behind this irrelevance proposition? A number of arguments that are rarely questioned. You will be familiar with them:

- A focus on the profitability of central bank actions would distract from good policy decision-making. Good policy decisions may lose money – as a prime example, price stability forgoes seigniorage income. But good macro outcomes involve welfare gains that swamp the efficiency losses that result from relying on other taxes. The objective function should therefore not contain profits.
- Nor would lack of profits hurt the capacity to implement policy. Central banks are immune from bankruptcy proceedings. They do not have regulators imposing regulatory capital minima on them. There are no behavioural constraints arising from liquidity needs: they can create universally-accepted payment instruments at will, so there is no cash-in-advance requirement.
- Besides, lack of profits is hardly a practical issue. Even with price stability, central bank monopolies over the issuance of currency and over the creation of settlement instruments held voluntarily by banks as reserves – often supplemented by the power to require banks to hold such assets – together mean that central banks have income to spare. Indeed, one of the worries of public sector institutional designers is the absence of a natural budget constraint.
- Moreover, in graduate school we learned to consolidate the public sector balance sheet. If seigniorage were ever insufficient, access to tax revenue should suffice.

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Belief in the accepted wisdom might – but was not – shaken by two internal contradictions:

- If price stability is the objective, what value is the ability to create outside money at will? That is, unless some theorem establishes beyond doubt that money creation “to pay the bills” will always be consistent with preserving price stability. Such a theorem would need to establish that the central bank’s costs will always be small relative to money demand, or that money creation to pay the bills will always be needed for the preservation of price stability when the central bank is making losses. I am not aware of such a theorem.
- Second, if an independent central bank is valuable for price stability, consolidation with the rest of the public sector should have non-trivial consequences. Consolidation implies that the same objective function is at work, as if used by the same decision-makers – the antithesis of independence.

But the financial crisis did more than any logical contradictions to introduce doubt about the irrelevance proposition. Central banks took on financial risks to previously unimaginable extents. Including central banks whose capitalisation had always been scanty, consistent with no need for pre-positioned financial buffers, and with the idea that the scale and robustness of seigniorage creates all the buffer that could possibly be required. In the face of risk exposures much larger than equity, various Governors started to ask whether the accepted wisdom was solid.

We approached the question in a non-theoretical way, concluding that:²

- There is enough solid theory to establish that the net present value of a central bank’s income and expenditure streams is *not* guaranteed always to be positive. In our terminology, comprehensive net worth can be negative.
- When the limits created by the possibility of negative comprehensive net worth are reached, policy objectives will have already been given away. That is, policy insolvency³ arrives before fundamental insolvency.
- Even before giving away policy objectives, negative accounting net worth may have shaken agents’ faith in the willingness or ability of the central bank to complete its mission, thereby undermining its capacity to do so.
- This threat to the effectiveness of policy transmission is relevant to situations where accounting net worth is negative despite comprehensive economic net worth remaining positive. Future seigniorage could fill the hole, but agents do not understand that.
- Even so, central banks can and do live in the never-never land of negative accounting net worth without generating doubts about their commitment or capacity. The central banks of Chile, the Czech Republic, Israel, Mexico and, prior to joining the eurozone Slovenia illustrate the point. These central banks have been successful in maintaining macro stability despite years of negative accounting net worth. But doubts would certainly arise were loss-making to become permanent.

In arriving at these conclusions, we had the benefit of a limited number of theory contributions. Important contributions are Fry (1992), Stella (1997), Bindseil et al (2004), Ize (2005), and Buiters (2008). The latter is particularly notable for establishing the analytical conditions under which a price stability objective is “financeable” (ie, consistent with non-negative comprehensive net worth) when the central bank is considered as an independent institution, and separately when it is backed by the government (when the central bank’s independent comprehensive net worth could be negative, within limits related to the consolidated government budget constraint).

² Archer and Moser-Boehm (2013)

³ Stella and Lonnberg (2008)

Since we reported our thinking in 2013, there have been a number of new theory papers on the subject, probably triggered by the same thoughts that occurred to the Governors who commissioned our work – if crisis related interventions cause central bank losses, is that something to worry about? Notable new contributions are those cited by Benigno and Nisticò: Del Negro and Sims (2015), Reis (2015), Hall and Reis (2015), and now the Benigno and Nisticò paper itself. They have some things in common:

1. They all show that it is logically possible for seigniorage income at price stability to be insufficient to finance the central bank's activities, or fill holes in its balance sheet caused by revaluation losses.
2. At the same time, they tend to accept that the states of the world that would actually make the central bank's finances a factor in policy decisions are extreme ones. They tend to concur with Fed staff analysis which suggests that there is a low probability that future seigniorage income will be insufficient to fill holes in accounting net worth and preserve positive comprehensive net worth.

Accordingly, while opening up the logical possibility of a deep problem, these papers do not challenge the accepted wisdom as directly as I fear is warranted. My case for being more alert has five parts, which I will take in turn.

Moving beyond the United States

All recent contributions to the literature are inspired by US circumstances, this paper less obviously than the others. It is US unconventional monetary policy and the potential for losses on interest rate risk that has caught the attention. How big could they be, relative to future seigniorage income? The new angle here is to ask whether central bank losses, hence curtailed remittances to the Treasury, could result in changes in general equilibrium.

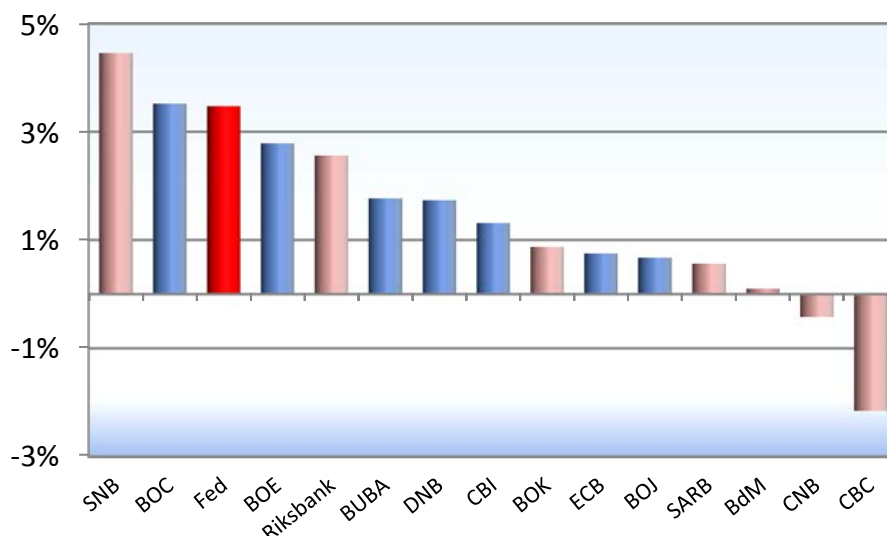
As Benigno and Nisticò note in their concluding remarks, moving from the closed to the open economy could make a difference. For one thing, in a closed economy, central bank losses that have their counterpart in taxpayer gains might not disturb general equilibrium when fiscal policy adjusts and central bank losses are compensated by the treasury out of higher lump sum taxes.⁴ But in an open economy, central bank losses might involve transfers to foreigners outside the tax net. The neutrality of general equilibrium outcomes is presumably less assured.

Most central banks have a substantial part of their assets in foreign currency instruments, giving immediate relevance to the open economy question. This stylised fact of central banking also raises questions about the baseline profitability of the central bank, and thus the strength of the mechanism for repairing holes in the balance sheet. (Benigno and Nisticò refer to a deferred asset regime when considering this repair mechanism. That is somewhat misleading, since only the Federal Reserve has a formal policy of representing as a current asset that part of future net income that would be needed to repair the hole in accounting net worth.)

Indeed, the Fed is unusually profitable among central banks, so the repair mechanism is unusually strong. Figure 1 shows the average earnings margin – average return on assets – of 15 central banks over the 20 years from 1995 to 2014. Over that period, the Fed and the Bank of Canada were the second most profitable central banks, with net earnings margins of 3½%. Capitalising that number with a low discount rate to reflect the low volatility of the earnings stream (more of which in a moment) creates a very large number for comprehensive net worth, and hence a very large buffer with which to absorb any current period losses.

⁴ Setting aside the incentive implications of removing central bank independence, the relative tax efficiency of seigniorage compared with other taxation channels when lump sum taxes are not possible.

(Pinkish bars show central bank with large proportions of assets denominated in foreign currencies)

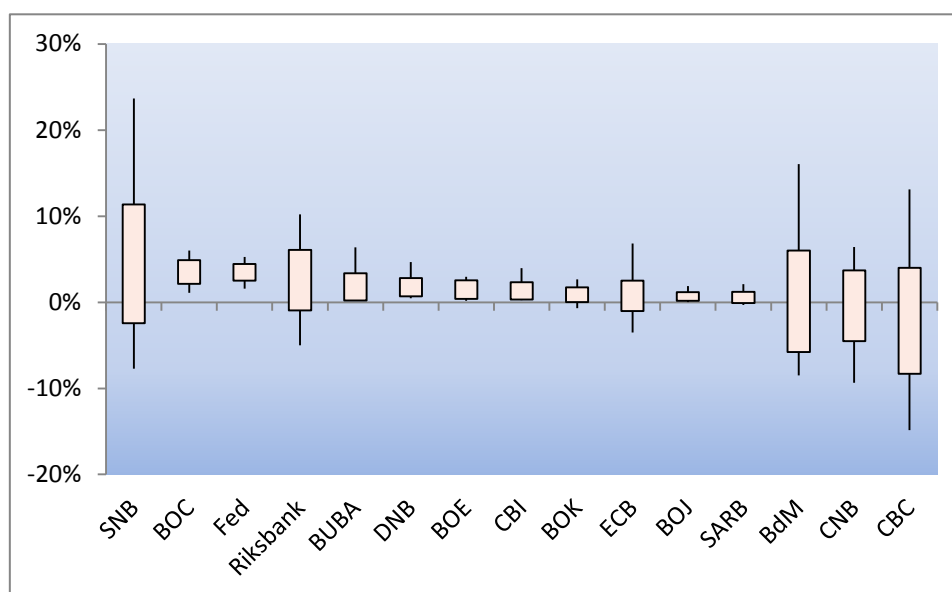


Sources: Central bank annual reports

Many central banks are not in such a comfortable position. Earnings margins below 1% are not uncommon, and two central banks in this group have experienced negative margins on average over this period. Central banks substantially invested in foreign currency – shown by the pinkish bars in Figure 1 – tend to have lower earnings margins, with the Swiss National Bank and Riksbank being the most obvious exceptions. What do we get from this? Assuming (bravely) that these 20 years provide reasonable clues for the future, the typical central bank faces a much bigger risk than the Fed that comprehensive net worth will not be big enough to absorb current period losses. Their potential need for fiscal backing is larger. And if they or their fiscal authorities seek to avoid fiscal backing, the risk of policy choices being affected is greater.

Moreover, with foreign currency exposures comes greater earnings volatility. Figure 2 shows the range of profit results of these 15 central banks over the same period. Five central banks stand out as having relatively high earnings volatility; all have recorded losses during this period. All five have high proportions of foreign currency assets. (The Fed is not one of the five; it has not made an annual loss in its history.)

As it happens, four of the five high variance cases record exchange rate translation gains and losses directly in the profit and loss statement, rather than awaiting the realisation of such gains and losses; the Riksbank is the exception. But it is not the accounting policy that drives the majority of these differences in earnings volatility, however – it is the nature of the balance sheet exposures caused by different assignments of policy responsibility to the central bank. To see this, note that the Bank of England also takes revaluations and translation gains and losses to profit and loss directly.



Sources: Central bank annual reports

The consequences of such volatility are three-fold. First, one would use a higher discount rate for calculating the present value of the net income stream. Second, losses erode accounting equity, and thereby reduce the share of liabilities that is interest free. So even if these central banks retain future surpluses to rebuild equity – and all of them can – the net earnings margin is itself damaged by the erosion of equity.⁵ Third, the risk of misperceptions arising about the willingness or ability of the central bank to follow through on policy promises may be greater, as losses and negative equity are encountered more frequently.

In short, using the US case to calibrate (formally or informally) an assessment of the likelihood that fiscal backing will be needed provides a benign answer that is probably not representative of central banking.

Repeated interactions with the Zero Lower Bound

Benigno and Nisticò characterise QE as private sector agents unloading risky securities on the central bank. That is a fair characterisation. Although the majority of the interventions have not been swaps of credit risky assets for high grade ones, there has been a substantial interest rate risk transfer to central banks. And one of the characteristics of QE at the Zero Lower Bound is the distorted price of the risk that is being transferred. For policy reasons, central banks have been willing to be the highest bidder for interest rate risk; forcing down the long end of the curve has been an objective.

The work of Carpenter et al (2013) and Christensen et al (2015) suggests that the Fed might get away with paying over the odds for interest rate risk. It might make money in total out of the

⁵ For all the central banks being considered here, and for the great majority of central banks, the distribution mechanism is asymmetric. If equity is positive – or above a target, in some cases – surpluses are shared via a surplus or dividend distribution, but losses are not compensated by way of an injection of replacement capital. A notable exception is the Central Bank of Brazil, where the distribution mechanism is symmetric.

balance sheet expansion, in addition to other policy gains that may have flowed from the unconventional policy. But that result would in part be the consequence of developments that are not likely to be repeated. Three things are relevant here. First, a large part of the balance sheet expansion seems likely to be permanent, based on new thinking about the efficient operational size of the balance sheet. Second, the whole yield curve seems to have moved down, also in a permanent or at least long lasting fashion. Third, with more normal rebounds from deep recession, policy interest rates would presumably need to move to constraining levels more quickly. Without repeats of such structural changes and with more normal rebounds, future QE will likely involve greater realisation of the interest rate risk taken on and much less favourable P&L outcomes.

The issue here is not whether the QE of recent years was right or wrong, too risky or appropriately risky for the circumstances. It is rather that future QE will also involve transferring risk from the private sector to the central bank at prices that would, in unconditional expectation, not fully compensate. Former Governor Shirakawa acknowledged that QE has quasi-fiscal attributes, by which I take him to mean precisely this dynamic. If, as many of my colleagues at the BIS fear, the world is setting itself up for repeated encounters with the Zero Lower Bound and “more of the same” in terms of policy response, the frequency of central bank losses would be expected to rise.

The background of falling net earnings margins

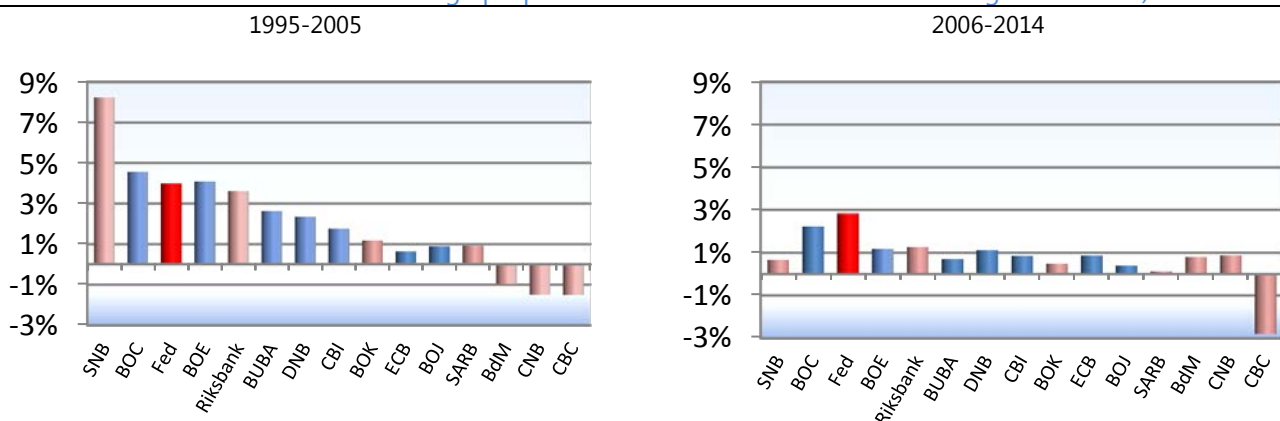
The long-lasting downward trend in nominal interest rates may have reduced the risk of losses from QE during the “back end of the policy carry trade” (as Marvin Goodfriend would put it), but it simultaneously threatens future profitability by compressing the net earnings margin. In addition, most central banks have been experiencing a significant reduction in the share of liabilities that bear no interest. The demand for currency notes has not expanded at the pace of balance sheet expansion, notwithstanding greater incentives to hold currency as interest rates approach the Zero Lower Bound. Moreover, changing thinking about efficient policy implementation has led to more widespread payment of interest on reserves.

We can already see the impact of this in net earnings margins. Figure 3 returns to Figure 1, but this time the period is divided into two halves:

Net earnings margins for 15 central banks (% of total assets)

Figure 3

(Pinkish bars show central bank with large proportions of assets denominated in foreign currencies)



Sources: Central bank annual reports

A strong downtrend in net earnings margins is evident for the majority of central banks. The Fed and the Bank of Canada are the only central banks in the later period with net earnings margins in

excess of 2%. These are the simplest central banks in terms of balance sheet structure, and both have the opportunity to invest predominantly in own currency, own government debt instruments at the same credit rating. Despite dominating the textbooks on central banking, they are the least representative of the species. Extending the view beyond North America reinforces the relevance of the issues analysed by Benigno and Nisticò.

Perceptions matter

The effectiveness of central bank policy transmission through markets depends on agents' beliefs about the deliverability of the policy objective. In our work, we found a large divide between central bankers who had lived successfully with losses and negative accounting equity, and those who had not yet had the experience. The former group are keen to explain that it does not matter – success can still be attained, given credible institutions and a good long term macro outlook. The latter group understood that logic, but did not want to “go there”, giving the sense that some effort would be made to avoid negative equity. One wonders how much of central banks' accounting policy choices are driven by the preference to hide volatility in hidden reserves rather than display it in declared equity that might sometimes become negative. And one might also wonder how much of the Fed's plan to repo rather than sell during exit is driven by an assessment of the relative effectiveness of policy implementation techniques, as opposed to avoiding recording negative realisations.⁶

Logically, the driving force for aversion to displaying losses and negative equity would be a concern about how private agents may interpret the situation. A perceptions effect is referred to obliquely by Benigno and Nisticò when they note that “In a case in which the economy is stuck in a sub-optimal allocation, quantitative easing policies can signal a more inflationary monetary policy stance ... inflation is either the desirable response to central bank's losses in order to restore central-bank profitability or the means to prevent any loss altogether.” A perceptions effect is addressed directly by Del Negro and Sims when they evaluate the case where the public believes that central bank loss-making will not lead to transfers from the treasury (perhaps because the central bank is averse to accepting financial support) but instead to seigniorage creation. In their model, self-fulfilling solvency crises are possible since expected jumps in inflation reduce the real value of central bank assets.

A central bank's financial results may help define the boundaries of the mandate

My final reason for doubting the proposition that a central bank's finances are irrelevant to its mission is the point that they can actually help define the boundaries of the mission. The key idea here is that legislatures do not provide independent agencies with blank cheques. Policy and operational authority are delegated with constraints that may in part be implemented through financial limitations.

In some countries, financial constraints are obvious. In the United Kingdom, for example, the Memorandum of Understanding between the Bank of England and the Treasury on crisis management makes it clear that when the Bank's crisis management actions create a risk to the tax payer, those actions are for the decision of the political authorities. In my own country, New Zealand, the decision on the target level of foreign currency reserves held by the central bank is expressly for the Minister of Finance, because the financial consequences of holding reserves end up with the tax payer.

In most cases, however, financial constraints are implicit. Consider the case of emergency lending in the context of liquidity stress. Restrictions placed by legislatures on the ability of central banks to lend to institutions at risk of insolvency guard against moral hazard, but they are also about not writing blank cheques that may have important distributional consequences (within the current

⁶ The reason for wondering does not have anything to do with the implications of the answer but rather is used to illustrate how an aversion to displaying negative accounting equity could be manifested.

generation, and between generations). More generally, the capitalisation of the central bank and its surplus distribution policies are usually determined by rules imposed by the legislature, after considering the central bank's policy and operational responsibilities.⁷ The constraint on seigniorage income posed by a price stability objective has implications for the capital needs of the central bank, should net earnings become so constrained that shocks to the balance sheet cannot be repaired within reasonable time frames, or operations not funded.

Similarly, foreign exchange reserves acquisition and market intervention have financial consequences for the central bank, and through the distribution mechanism, fiscal consequences. Using Benigno and Nisticò's logic, these might not be neutral in general equilibrium, and again distributional implications are relevant. It is thus appropriate that financial aspects of such policies enter the cost-benefit calculus. Considering the proximate impact on the central bank's finances may be an indirect way of doing that. But as demonstrated by the recent decision of the Swiss National Bank to abandon its exchange rate floor in the face of mounting financial risks to the SNB, the financial impact on the central bank may be highly correlated with the financial effects relevant to the wider public policy decision.

In all cases, there is a constitutional logic for legislatures to determine the degree of independent access to financial resources allowed the central bank. Pushing outside the envelope so determined raises legitimate questions about the appropriateness of actions.

Concluding remarks

I have focussed on a particular aspect of the bigger topic addressed by Benigno and Nisticò. As highlighted by the title of their paper, it matters if monetary policy actions could indeed disturb equilibrium outcomes and we should know how such effects might come about. The specific channel they highlight – central bank P&L – is also interesting, given that it has been subject to its own irrelevance proposition. As with other very recent contributions to the theoretical literature, their paper provides good reasons to doubt this irrelevance proposition, at least across all the relevant alternative constructions of institutional arrangements.

The independent central bank is an institutional arrangement that lends itself to breaking the transfer chain that underpins the neutrality result that is Benigno and Nisticò's main focus. As for the proposition that a central bank finances are irrelevant to its policy task, my intention has been to add some richness to the argument that financial results might in some circumstances be deeply relevant. Especially, I have sought to emphasise that once one looks past the unusually comfortable financial position enjoyed by the Fed to more normal central banks, the reasons to consider the financial strength of the central bank grow.

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Tucker (2014) has been arguing to make the central bank's entitlement to draw on taxpayer resources in emergency circumstances a matter for explicit decision, within the context of a "fiscal carve out" that would operate in a similar manner to the "credit accord" that Goodfriend proposed in 1994 as an accompaniment to the Treasury Accord of 1952.

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