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Designing QE in a fiscally sound monetary union

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In response to the global financial crisis the central banks of many advanced economies have adopted large-scale asset purchase programmes, with particular prominence given to purchases of sovereign debt. These programmes – often labelled as quantitative easing or QE – are intended to overcome the lower-bound constraint on short-term interest rates in an environment of persistently low inflation rates. This article offers a conceptual perspective on a number of design issues of QE that are specific to monetary unions. In general, design options for QE depend on the degree of institutional completeness of a monetary union. This is illustrated with findings from a stylised model of a monetary union which assumes an environment in which the central bank can always be assured that national fiscal policies are sustainable. Such setting is conducive to a particularly effective design of QE.

Euro area context

Any design of quantitative easing, or QE, for a monetary union like the euro area involves specific considerations that must take its unique architecture into account. Currently, the euro area consists of a single monetary policy and 19 fiscal policies that are predominantly decided at the national level.

As stressed in the *Five Presidents' Report*, a number of dimensions of this architecture are incomplete, leading to a call for substantial reforms, including a better governed fiscal framework and better integrated financial markets. The Report concludes that "...progress will have to follow a sequence of short- and longer-term steps, but it is vital to establish and agree on the full sequence today. The measures in the short-term will only increase confidence now if they are the start of a larger process, a bridge towards a complete and genuine EMU."^[2]

Ideally, a comprehensive model-based design of euro area monetary policy options near the lower bound should take the current incompleteness of the Economic and Monetary Union (EMU) as given. At the same time, to ensure a robust forward-looking dimension of the design, judgement will be needed as concerns possible shorter and longer-term changes to the euro area architecture. Such comprehensive characterisation of policy options is a formidable challenge.

This Research Bulletin article, based on a parallel paper by Bletzinger and von Thadden (2018), does something much simpler. Focusing on conceptual aspects, it summarises findings from a model-based analysis which deliberately isolates the forward-looking dimension. The idea is to explore how QE could be designed once the EMU has been made more complete via reforms. In particular, our model assumes that national fiscal policies are subject to a better governed fiscal framework. Moreover, we consider in parallel a shift towards better integrated financial markets. As summarised in the next section, in such an environment there is scope for a particularly effective design of QE, comparable to "stand-alone economies" with a single monetary and a single fiscal policy, and despite possible asymmetries between the member countries of the monetary union. As emphasised in the final section, incomplete monetary unions raise additional questions, not analysed in this article.

Long-term policy options under a sound fiscal governance structure

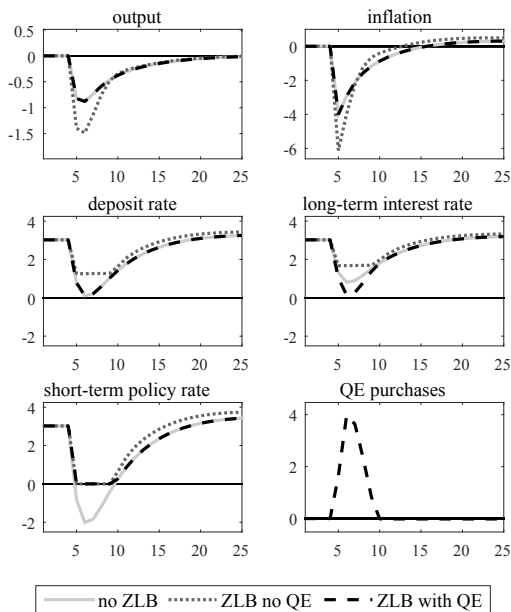
Bletzinger and von Thadden (2018) develop a stylised, analytically tractable model of a two-country monetary union assuming a sound fiscal governance structure. Soundness is captured by the assumption that governments of member countries follow credible feedback rules that always preserve fiscal sustainability. This simplification makes it possible to disregard the notion of sovereign default.^[3] Moreover, the model considers a portfolio balance channel that assumes imperfect substitutability between short-term and long-term debt.^[4] This assumption ensures that central bank purchases of long-term

government debt (QE) can be effective via portfolio reallocations along the yield curve, even if the short-term rate has reached its effective lower bound.^[5] Moreover, under certain scenarios sovereign bonds issued in the two countries are assumed to be imperfect substitutes, e.g. consistent with home bias in sovereign bond holdings. In order to characterise the design of monetary policy options near the lower-bound constraint on short-term interest rates in such an environment, the analysis proceeds in two steps.

In a first step, the analysis considers a special parameter case in which the monetary union is symmetric (implying that both countries are identical such that they behave like a single stand-alone economy). In the presence of the portfolio balance channel, QE becomes effective. In particular, the paper shows that for sufficiently small shocks an interest rate rule augmented by QE at the lower bound exists that replicates the equilibrium allocation and the welfare level of a hypothetically unconstrained economy.^[6] Shocks large enough to push the whole yield curve to the lower bound require, in addition, forward guidance (i.e. the promise to keep short-term interest rates lower for longer than implied by a conventional interest rate rule).^[7]

Figure 1 illustrates the effectiveness of QE for a shock that makes the lower-bound constraint on the short-term interest rate binding. A central bank reaction with QE (*ZLB with QE*) lowers the long-term interest rate, when compared with a central bank reaction without QE (*ZLB no QE*). This lowers the interest rate that is relevant for private consumption and savings decisions, namely the interest rate on deposits, thereby stimulating aggregate demand and leading in sum to smaller declines in output and inflation. Moreover, the magnitude of QE purchases of long-term debt is chosen such as to perfectly replicate the equilibrium allocation and the welfare level of a hypothetically unconstrained economy (*no ZLB*).

Figure 1: Impulse responses to a symmetric demand-driven crisis in a structurally symmetric monetary union with a binding lower bound constraint



Notes: For the ease of exposition, only the variables of one country are shown. Due to symmetry, those belonging to the other country are identical. Output and QE purchases are measured in percentage deviations from steady-state output. Inflation and interest rates are expressed as annualised net nominal levels in percent. The x-axis is stated in quarters.

In a second step, these results are generalised to an asymmetric monetary union in which the two countries are no longer identical. The asymmetry is assumed to arise either from an asymmetric exposure to shocks or from asymmetric structures for the transmission of monetary policy, everything else being equal. As illustrated in the paper, in equilibrium asymmetries give rise to current account imbalances. Under weakly integrated financial markets these imbalances are primarily funded through the central

bank's balance sheet, whereas under strongly integrated financial markets the funding is mainly done by private capital imports. Moreover, the findings support that at the lower bound, as long as asymmetries between countries result only from shocks (of the type depicted in Figure 1), outcomes under a hypothetically unconstrained policy rule can be replicated via a symmetric QE design. In other words, the central bank would purchase equal shares of sovereign debt of the two countries. This finding reflects the fact that the lower bound imposes a constraint on the uniform instrument of the short-term policy rate, creating a symmetric restriction for the portfolio adjustments for the two structurally identical countries.

By contrast, asymmetric structures of the countries that matter for the transmission of monetary policy can translate into an asymmetric QE design. The paper illustrates this finding by assuming that the portfolios of the banking systems in the two countries exhibit a different degree of home bias. Under the particular assumptions of the model such an asymmetric structure favours an asymmetric QE design. In other words, the central bank would purchase a higher share of the bonds issued by the country where banks have larger exposures to their own sovereign, thereby offsetting asymmetric demand patterns induced by the lower-bound constraint. This suggests that a portfolio bias in QE has the potential to alleviate differences arising from asymmetric structures at the lower bound (although in case of exposures that are seen as excessive a lasting solution will only be offered by structural reforms or regulation).

Final remarks

The above summarised analysis, by construction, does not capture many relevant dimensions of an *incomplete monetary union*, like weak fiscal governance structures, concentrated exposures of bank portfolios to their own sovereign that create negative bank-sovereign feedback loops, and an insufficiently coordinated aggregate fiscal stance across member states. Thus, when interpreting the findings it needs to be kept in mind that monetary policy options near the lower bound for an incomplete monetary union involve many additional considerations. These considerations relate, inter alia, to preserving the singleness of monetary policy, limited risk-sharing modalities in the absence of a euro area-wide safe asset and incentives for governments to pursue sound policies. The various safeguards of the ECB's Public Sector Purchase Programme (PSPP) – which include among others that the shares of purchases are guided by the ECB's capital key – incorporate such considerations "commensurate with the current architecture of Economic and Monetary Union".^[6]

To make the current architecture of the euro area more complete, a balanced agreement is needed on the substance and sequence of the shorter and longer-term steps to be taken. Such an agreement would improve the effectiveness of monetary policy in a low inflation environment.

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[2] See European Commission (2016, p. 5).

[3] A fiscally complete monetary union may well allow for mechanisms facilitating an orderly restructuring of unsustainable national sovereign debt, including (possibly diversified) contingent claims of different seniority, as recently advocated by the Centre for Economic Policy Research (2018).

[4] This feature can be rationalised via a segmentation of bond markets with different maturities due to portfolio adjustment costs faced by banks.

[5] As detailed in the paper, there are limits to the effectiveness of QE. All debt is assumed to be held by banks, backed by deposits owned by households. The deposit rate is identical to the weighted return on short-term and long-term debt and is, under the assumptions of the model, constrained to be non-negative.

[6] If the portfolio balance channel is not active, QE is ineffective, in line with the New Keynesian benchmark analysis provided by Eggertsson and Woodford (2003).

[7] As long as interest rates are unconstrained, QE and forward guidance can work as substitutes. However, forward guidance remains effective, even if QE ceases to be effective (ie if the deposit rate offered by banks reaches its lower bound).

[8] See the accounts of the ECB's Governing Council Meeting from 21/22 January 2015. Generally speaking, the PSPP is embedded in a comprehensive setting of complementary non-standard measures, including (targeted) long-term refinancing operations offered to banks, purchases of private securities, negative rates, and forward guidance. Moreover, its design features are different from those of the OMT (Outright Monetary Transactions).

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