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EDITORIAL:

Public sector sustainability and large stabilization measures: the need to stay well below the fiscal limit

Despite massive fiscal measures in many countries to stabilize and revive aggregate economic activity from the depressed levels that prevailed in these economies, hard-hit by the global recession, the global economy is still struggling to reach a path of robust growth. Stabilization efforts have not been uniformly successful, with the consequence that differences among countries, especially within the euro area, have tended to widen as these economies have been subjected to increasing stress due to a sovereign debt crisis that is chipping away at the fundamentals necessary for recovery and growth.

After the 1970s, both macroeconomists and policy-makers became convinced that the key policy factor driving inflation, and more generally the short-run dynamics of the macroeconomy, is the inherent time-inconsistency of economic policy-making, and that this is an issue that cried out for resolution so as to anchor expectations. The 1980s then saw institutional solutions marked by a wider separation between fiscal and monetary policy-making. Monetary policy was delegated to independent central banks and, especially in the 1990s, inflation targeting gained ground among central banks, particularly in the more advanced economies, as the key monetary policy strategy for maintaining price stability, ie low and stable inflation. Monetary policy assumed a key role in short-run stabilization policy, whereas fiscal policy focused more on structural issues related to longer-run growth. The resulting policy regime and the associated policy responsibilities were only occasionally questioned, and the arrival of the era of Great Moderation rendered the regime seemingly self-confirming.

With the benefit of hindsight, we see that one of the key assumptions underlying the delegation of monetary policy to an independent central bank seems to have been that, whatever happens, fiscal policy would ensure the sustainability of public finances, so that monetary policy could focus on inflation control. In modern parlance, from the perspective of price-level determination, the policy regime was intended to be one of monetary dominance. In macroeconomics, the period of the Great Moderation was one of active interaction between monetary macroeconomics and actual monetary policy-making. However, many in

macroeconomics who were seeking to come to grips with inflation and its determinants were comfortable with abstracting away from fiscal policy and implicitly assuming that the fiscal adjustments needed to enable monetary policy to control inflation would always be forthcoming. On the other hand, although the issue of the sustainability of public finances was raised in public debates, the effects of the interaction of fiscal policy measures and public debt dynamics on aggregate outcomes were systematically studied by a mere handful of macroeconomists prior to the most recent crisis. Their voices were mostly drowned out by the scoffers of killjoys who would remove the punch bowl while the party was in full swing.

The most recent crisis changed the scene. Fiscal policy is now back at the forefront of macroeconomics. In particular, fiscal policy is again on the agenda for price level determination as well as stabilization. In this context, recent studies have produced a set of new and promising results on the effects of fiscal-monetary policy interaction on price level determination as well as on the effects of interaction between stabilization policy and public-sector financial sustainability. This literature has introduced, in particular, the notion of a country's *fiscal limit* to argue that the macroeconomic outcome of a fiscal-monetary policy regime at or near the fiscal limit can be quite different from that which obtains far away from the limit. Moreover, concerns about the sustainability of public finances may overburden stabilization efforts, such that the latter lose some of their more conventional properties, ie properties with which we are comfortable at a lower level of government indebtedness. For example, near the fiscal limit, the output-contracting effects of a temporary monetary tightening are relatively strong, whereas inflation recedes only momentarily before beginning a sustained medium-term rise.[1] Although the fiscal-limit concept is well defined theoretically – maximum government debt that the government can finance via future tax increases - currently we are short of ideas of how to map its theoretical content into observables - empirically measurable quantities. However, one may argue that the idea of a fiscal limit is useful in the following sense: it forces us to consider ***all*** aspects of a country's fiscal-monetary policy regime and offers us a broad view as to whether there is a sustainability problem in government finances that needs the attention of policy-makers and which could prevent the regime from producing optimal macroeconomic outcomes. The fiscal limit is more than a number; it is a perceptive way of looking at fiscal-monetary policy regimes.

Jouko Vilmunen

Financial accelerator through quantity rationing

All of the major financial crises, from the Great Depression of the 1930s through to Asia in the latter half of the 1990's and to the most recent one, clearly show how important the financial sector is for the smooth functioning of the aggregate economy. These crises also show how the

[1] See in particular Bi – Leeper – Leith (2010), *Stabilization and Sustainability: Macroeconomic Policy Trade-offs*, working paper, http://mypage.iu.edu/~eleeper/

financial sector can affect business in a very fundamental way. The influence of the financial sector for the behaviour of the aggregate economy is more often than not discussed under the concept of the "broad credit channel". The idea here is that frictions in the financial market tend to amplify and propagate to the future the effects of aggregate shocks and, consequently, that the broad credit channel presents itself as a natural candidate for explaining many of the salient features or stylized facts of business cycles, such as the high variance and output growth autocorrelations observed in the data relative to those of the shocks hitting the economy.

It is well known that the broad credit channel rest on the financial accelerator (FA) mechanism, an idea introduced by Ben Bernanke and Mark Gertler into the (quantitative) business cycle literature in their seminal 1989 contribution.[2] According to the idea, critical friction in the financial market arises from an agency problem, say a costly state verification problem that drives a wedge between the cost of a firm's external funds and the market interest rate. The size and behaviour of this wedge depends on the firm's creditworthiness − net worth − which, in turn depends, at least partly, on the state of the macro-economy. Typical business cycle shocks change the size of this wedge in a countercyclical manner, since the firm's net worth behaves pro-cyclically. Hence, during upswings the wedge shrinks; while once output growth slows and a recession looms the wedge tends to widen. It is also generally thought that this mechanism is especially true for small (non-creditworthy) firms who generally face higher external finance premiums in recessions. All in all, however, the important implication is that business cycle fluctuations are amplified due to of the financial accelerator mechanism à la Bernanke - Gertler.

As already pointed out by Anil Kashyap, Owen Lamon and Jerome Stein[3] in 1994 in their paper on the relationship between credit conditions and cyclical behaviour of inventories and reiterated by eg Frédéric Boissay[4] (2001) in his contribution on the interaction between credit rationing and business cycle dynamics, there is one problem with the Bernanke - Gertler version of the FA mechanism. The basic premise of this version, that firms' investment and inventories are sensitive to interest rate changes, is only weakly supported by empirical evidence, if at all. Given this balance of the evidence, we can ask what the implications for the FA or for the broad credit channel are. The evidence should perhaps not be read as suggesting that FA should be abandoned as a plausible financial mechanism for amplifying the aggregate effects of business cycle shocks, but rather that the cost-of-funds version of the mechanism may be inadequate and so we should not focus on it. More to the point, relevant background literature has found that financial variables like cash flows, assets, coverage ratios have a significant effect on business inventories and investment, which suggests that interest rates do a poor job of capturing changes in financial conditions (Boissay, 2001, p. 7). Furthermore, some borrowers may face particular quantity rationing constraints and hence be unable to obtain funds at the prevailing lending interest rates. In light of the empirical evidence, this latter point appears

[2] B. Bernanke – M. Gertler (1989), "Agency Costs, Net Worth and Business Fluctuations", *The American Economic Review*, Vol. 79, pp. 14 - 31.

[3] A. Kashyap – O. Lamon – J. Stein (1994), "Credit Conditions and the Cyclical Behavior of Inventories", *The Quarterly Journal of Economics*, Vol. 109, No 3, pp. 565 - 592.

[4] F. Boissay (2001), "Credit Rationing, Output Gap and Business Cycles", *ECB Working Paper No. 87/2001.*

George Waters

not entirely unfounded.

The arguments put forward in the previous paragraph strongly suggest that borrowing costs do not fully reflect the availability of credit in the economy. This theme is recurrent in discussions about the interaction between financial markets and the macro-economy, as George Waters points out in his recently published Bank of Finland discussion paper.[5] Waters also aptly notes that while the development of DSGE macroeconomic models is proceeding rapidly, in most of these models the additional aggregate fluctuations from such frictions arise due to changes in the cost of (external) financing, ie *price* rationing. The author goes on to develop a parsimonious DSGE model with quantity rationing where, in addition to price rationing, some firms may be denied loans. Later in the paper, he calibrates the model and runs a simulation exercise. The model assumes that firms have heterogeneous needs for working capital to pay bills and must provide collateral in the form of current period cash flow. That is, only a part of the current period revenues can be pledged as collateral against credit. This set-up therefore implies that interest rates alone do not reflect changes in financial conditions, but that the amount of collateral required by intermediaries is the key parameter capturing credit market conditions. For example, an exogenous increase in credit market stress, involving an increase in collateral requirements, leads to a temporary increase in interest rates; this, in turn, has a modest immediate effect on aggregate real activity, but a prolonged effect on the fraction of firms receiving financing and output.

Waters refers to existing evidence from the US to partly motivate his analysis, and partly to empirically investigate the validity of the implications of his theoretical model. Indeed the graphical evidence provided by him suggest that an increase in borrowing costs along with a persistent decline in real aggregate activity describes the US experience after the most recent financial crisis. Also, the empirical measure of credit market tightness from the survey of bank managers by the New York Federal Reserve is negatively correlated both with the real GDP and capacity utilization, which can be used as a proxy for the fraction of firms receiving financing. The same set of VAR-based evidence reported by Waters also suggests that borrowing costs are not quantitatively significant. Overall, then, the evidence from the US indicates a strong role for quantity rationing.

Although Waters is not the first one to use a survey of bank managers in his empirical analysis to demonstrate that credit market tightness and lending standard are negatively correlated with capacity utilization and real aggregate output in the US, he is among the first to theoretically motivate the importance of quantity rationing to business cycle dynamics through DSGE modelling. In this context Waters rightly notes that a number of research papers develop DSGE models with financial intermediaries whose lending is constrained by frictions arising from an underlying agency problem, which generates agency restrictions in the form of net worth, monitoring costs or collateral constraints. But the financial frictions in these papers take the form of price rationing, ie financial frictions affect the behaviour of households and firms through higher interest rates or spreads. As Waters further notes, to account for the observed decline in output after the onset of eg a financial crisis, these models have to be calibrated so that the magnitude and

[5] G. Waters (2012), "Quantity Rationing of Credit", Bank of Finland Research Discussion Paper 3/2012.

persistence of the decline in real activity is matched by that of an increase in borrowing costs in these models, which is not the typical pattern in recessions driven by financial factors.

Through his research work George Waters provides a very important contribution to quantitative macro-economic modelling and extends the current set of DSGE model in the most useful way. Financial crises, in particular, often bring about greatly reduced trading activity in several parts of the financial markets, potentially implying that the informativeness of the price system is reduced do to thin markets. Hence, prices in financial markets do a poor job in capturing the availability of finance and changes in lending conditions in this case. That is, the prices in are not a sufficient statistics for the financial market equilibrium. This highly interesting line of research hopefully attracts other macro-economists to develop these models further.

Jouko Vilmunen

Internationalisation of the renminbi and China's monetary policy

Iikka Korhonen

China has recently taken several steps towards more liberal capital flows and wider international use of the renminbi. As with previous economic reforms in China, the liberalisation of capital movements is relatively slow and gradual. China's current growth model is largely based on a high savings ratio and the channelling of savings via state-owned banks to various investment projects. Liberalisation of capital movements is almost inevitably linked with substantial liberalisation of China's financial markets, which could pose a risk to the current growth model. But without such liberalisation, it will be virtually impossible for the Chinese currency to attain an internationally important position. Even though the renminbi is now somewhat more widely used as an invoicing currency in foreign trade, foreign companies must be able to invest their renminbis in something before they are needed again. There is also a clear need to hedge against exchange rate fluctuations.

A number of studies have been published in the BOFIT Discussion Paper series analysing changes in Chinese financial markets, eg from the perspective of capital-flow liberalisation. Two papers (He and Wang: 'Dual-track Interest Rates and the Conduct of Monetary Policy in China', BOFIT DP 21/2011 and Ma, Xiandong and Xi: 'China's evolving reserve requirements', BOFIT DP 30/2011) examine China's current monetary policy tools. The role of policy interest rates is relatively small, but for example reserve requirements are widely used for steering bank lending. However, the use of reserve requirements is a form of tax on banks, and its steering effect differs from that of a policy interest rate. If liberalisation of capital flows continues, monetary policy tools also need to be developed further.

In the past few months the growth of China's foreign reserves has moderated or even come to a halt. Appreciation pressures on the renminbi have therefore abated at least temporarily. However, liberalisation of capital flows also means increased volatility of exchange rates. Market-based determination of the exchange rate might lead to

large changes in the renminbi's external value for example if the currency is substantially undervalued at the moment. Some estimates suggest that the renminbi is as much as several tens of per cent undervaluated relative to the equilibrium value. It is however not self-evident that the Chinese currency is currently substantially undervalued. He, Qin and Liu ('Exchange rate misalignments: A comparison of China today against recent historical experiences of Japan, Germany, Singapore and Taiwan', BOFIT DP 22/2011) show that the renminbi has developed much in line with currencies of four other rapidly developed countries at peak growth stages. Furthermore, Cheung and Fujii ('Exchange rate misalignment estimates - Sources of difference', BOFIT DP 25/2011) show that estimates of the equilibrium value of any given currency are highly sensitive to the quality of the data. For this reason older estimates for emerging economies in particular may be very inaccurate, as in many countries comparison eg of price levels has been genuinely possible only in recent times.

China's economic upsurge and ongoing integration into the world economy will almost inevitably lead to liberalisation of its capital flows. For this to take place without severe problems, China must eg renew its financial system and monetary policy tools. Even though work towards this end has already begun, the list of required actions is long. Reforms are nevertheless necessary to guarantee sustainable long-term economic growth for China.

Iikka Korhonen

Conferences and seminars

Financial and Macroeconomic Stability: Challenges ahead
June 4–5 2012, Istanbul

The goal of this conference is to provide a platform for exchanging ideas among academics and policymakers, both from developed and emerging economies, with a special focus on the risks and challenges for sustaining financial and macroeconomic stability.

The conference will be organized by the central bank of Turkey jointly with the Bank of Finland and Bank of Brazil and in cooperation with the Journal of Financial Stability.

Please see the call for papers for details at
http://www.tcmb.gov.tr/yeni/konferans/fms/Home_files/callforpapers.pdf

Search Frictions and Aggregate Dynamics
18–19 October 2012, Helsinki

Dynamic macro-models that allow for search and matching frictions not only in labour but also credit markets could improve our understanding on the dynamic interaction between macroeconomy and capital markets. The need for such joint modelling has been highlighted by the most recent financial crisis. This theme will be explored from various viewpoints at a conference organized jointly by the Bank of Finland (Research), the CEPR (Centre for Economic Policy Research) and the Federal Reserve Bank of Philadelphia.

For the call for papers, please visit
http://www.suomenpankki.fi/en/tutkimus/konferenssit/tulevat_konferenssit/Pages/CEPR_2012.aspx

The deadline for submissions is 31 May 2012.

China's Financial System and Internationalization of the Renminbi
17–18 September 2012, Helsinki

As China's importance in the world economy has grown, so has interest in its financial sector. Furthermore, the on-going liberalization of China's capital flows and the internationalization of the Chinese renminbi will have far-reaching consequences for the Chinese financial system. These topics will be discussed at a research workshop hosted by the Bank of Finland Institute for Economies in Transition (BOFIT) and organized by the Central bank-Academia Network on the Chinese economy, a joint venture between the Chinese Economic Association (Europe) and BOFIT.

Please see the Call for papers for further details at
http://www.suomenpankki.fi/bofit/bofit/ajankohtaista/tapahtumat/Pages/cfp_china2012.aspx

Bank of Finland Research Seminars

Thursday 3 May 2012
Prof. Guglielmo Maria Caporale
Brunel University London
Fiscal spillovers in the euro area

Thursday 7 June 2012
Prof. Guido Ascari
University of Pavia
Does inflation walk on unstable paths? Rational Sunspots and Drifting Parameters

Research seminars organized by the Bank of Finland's research unit are held on the first Thursday of the month at 13.30–15 in Rauhankatu 19, 3rd floor big meeting room (unless indicated otherwise). Research seminars are open to all interested parties. Please register in advance at seminars@bof.fi by noon of the preceding day. For further information please visit the seminar site.

BOFIT seminars

Tuesday 24 April 2012
Pierre L. Siklos
Wilfrid Laurier University & Viessmann European Research Centre
No Coupling, No Decoupling, Only Mutual Inter-Dependence: Business Cycles in Emerging vs. Mature Economies

Friday 27 April 2012 at 10.00
Wing Thye Woo
UC Davis
Sorting Out the Competing Solutions to U.S. Economic Malaise: Quantitative Easing, Reducing the Size of the State, and Confronting Globalization

Thursday 10 May 2012 at 14.00
José R. Sánchez-Fung
Kingston University, London
Examining the role of monetary aggregates in China

Friday 1.6.2012 at 13.00
Sherrill Shaffer
University of Wyoming
Assessing Competition with the Panzar-Rosse Model: The Role of Scale, Costs, and Equilibrium

Tuesday 12 June 2012
Zuzana Fungáčová (BOFIT), Rima Turk Ariss (Lebanese American University) and Laurent Weill (University of Strasbourg)
Does Excessive Liquidity Creation Trigger Bank Failures?

BOFIT seminars, open to all interested parties, are held on Tuesdays at 10.30 in Rauhankatu 19, 3rd floor big meeting room (unless indicated otherwise). Please register in advance via Liisa Mannila (firstname.lastname@bof.fi). For further information please visit the seminar site.

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