Fiscal policy, public debt and monetary policy in EMEs: an overview

M S Mohanty[1]

1. Introduction

During the 1980s and 1990s, the vulnerability of EMEs to shocks was often exacerbated by high fiscal deficits, underdeveloped domestic bond markets, and large currency and maturity mismatches. In many cases fiscal and monetary responses were procyclical. Debt management policy played very little part in either the choice of an optimal debt maturity or in stabilising the economy.

Since the beginning of 2000s, however, the role of fiscal and monetary policy has started to become more active. Fiscal deficits and public debt levels in EMEs as a whole have declined substantially. Domestic financing has increased, and the share of foreign currency debt has fallen dramatically. And the average public debt maturity has lengthened significantly. What do these developments mean for monetary policy, particularly in the context of the recent global financial crisis? Has the threat of fiscal dominance in EMEs lessened, just when it has grown in the advanced economies (BIS (2012))? Have fiscal and monetary policies in EMEs become more countercyclical than in the past? Has the development of domestic bond markets helped? What role have central banks played in debt management and what are the implications for monetary policy?

These questions were the focus of discussion at the 17th Annual Meeting of Deputy Governors from major EMEs held at the BIS in Basel on 16–17 February 2012. The meeting addressed three issues: (i) the fiscal constraints on monetary policy; (ii) the impact of local currency bond markets on central bank policies; and (iii) the role of central banks in public debt management. The current volume brings together the papers prepared by the BIS staff for the meeting as well as the contributions of central banks.[2]

One major finding emerging from the meeting was that improved fiscal positions helped many EMEs to rely on countercyclical fiscal and monetary policies to stabilise their economies during the recent global financial crisis. Anchoring medium-term fiscal expectations was crucial, but it was not by itself sufficient to insulate the economy from the shock. Greater access to domestic financing and the consequent reduction of currency mismatches, enabled by the domestic currency bond market, played an important role.

Yet these conclusions came with a number of caveats. Although fiscal dominance has fallen in many EMEs, contingent liabilities and the costs of ageing populations pose serious medium- to long-term fiscal risks to many EMEs. In addition, although government debt levels have moderated, the volume of securities issued by central banks has expanded substantially, largely reflecting interventions in the foreign exchange market. Not only is the combined gross debt of the official sector (the government and the central bank) now large in many countries, but a considerable part of this debt consists of short-term securities, which are not characteristically very different from monetary financing. The implications of these balance sheet developments for price and financial stability require careful monitoring.

---

[1] I am thankful to Ken Miyajima and Előd Takáts for their contributions to this overview, and to Philip Turner for comments.

[2] The last time the Deputy Governors discussed fiscal/monetary interaction was in 2002 (see BIS (2003)).

The rest of this overview summarises the key points from the discussion and the background papers along the three organising themes of the meeting.

2. Fiscal constraints on monetary policy

For much of the past three decades, fiscal policy remained a major concern for monetary policy in EMEs. Unsustainable fiscal deficits and public debt levels created the spectre of fiscal dominance in many countries, leading to high and volatile inflation and elevated risk premia on government debt. An unfavourable exchange rate dynamic – linked to weak fiscal and monetary policy credibility – exposed EMEs to destabilising capital outflows. As summarized by Yörükoğlu and Kilinç in their paper, such a fiscal setting was associated with low levels of financial development, a high degree of dollarisation, and high exchange rate pass-through. The consequence was that both fiscal and monetary policies tended to be procyclical in many countries, accentuating rather than damping economic volatility.

Shift to countercyclical fiscal and monetary policy

However, as argued in this volume by Montoro, Takáts and Yetman in their BIS background paper on "Is monetary policy constrained by fiscal policy?", many EMEs have grown out of this procyclical policy bias over the past decade. A significant decline in fiscal deficits and public debt has reduced the problem of fiscal dominance, and made countercyclical policies more feasible. While EMEs' average fiscal deficits as a percentage of GDP fell through the 1990s and the 2000s, reaching 1.8% during 2000–07, the period before the recent financial crisis, the reduction in gross public debt as a share of GDP was even more impressive. By measuring the degree of policy cyclicality from two separate fiscal and monetary policy reaction functions (from a Taylor rule), the authors show that in a majority of EMEs both fiscal and monetary policies were used to smooth output volatility during 2000–11. The scale of monetary and fiscal easing implemented by several EMEs in the worst phase of the recent global financial crisis was simply unthinkable during the 1980s and 1990s.

Several country papers in this volume discuss the factors heralding this change. In most cases, measures to strengthen medium-term fiscal sustainability and monetary policy credibility played a decisive role. Brazil provides an interesting example of a dramatic turnaround in an economy that was once considered to be very vulnerable to crisis and procyclical policies. As noted in the paper prepared by Araújo, Azevedo and Costa, Brazil's policy flexibility was enhanced by a number of critical policy reforms in the 1990s and 2000s, including the switch to an inflation targeting regime; concerted actions by the central bank and the Treasury to reduce the magnitude of short-term and various types of index-linked debt in the economy; and the introduction of the 1999 Fiscal Responsibility Law to strengthen financial institutions and transparency as well as to reinforce the goal of maintaining consistent primary surpluses.

The paper by Braude and Flug demonstrates the marked difference in Israel's responses to the 2001–03 and 2008–09 global shocks, which were dictated largely by the initial fiscal conditions facing the country. In the earlier period, high public debt and weak fiscal credibility meant that any increase in the fiscal deficit quickly translated into higher government bond yields. Even a modest reduction in the policy rate was considered by investors as unsustainable, causing sharp currency depreciations and subsequent monetary tightening. By contrast, during the 2008–09 global recession, the government allowed its fiscal deficit to rise and the central bank cut policy rates sharply. Improved fiscal and monetary credibility ensured that financial markets had little doubt about the sustainability of countercyclical policies.

The discussion and country papers also confirmed that many commodity-exporting countries have been able to reduce their vulnerability to the potential volatility associated with

commodity price cycles. In Chile's case, as discussed in the paper by Claro and Soto, the introduction of the Fiscal Responsibility Act in 2006 proved to be a major turning point for the economy. It mandated the government to adopt a structural budget balance target, ie a fiscal balance corrected for fluctuations in revenue and expenditure due to business cycles. Similarly in Peru, as discussed by the paper by Rossini, Quispe and Loyola, fiscal rules providing for a nominal deficit target and a maximum limit for growth in non-financial public sector expenditure were critical in reducing the net debt of the public sector (public sector liabilities minus public sector assets). Together with accumulated surpluses in a separate fiscal stabilisation fund, the new fiscal framework has strengthened the role of monetary policy.

The meeting also focused on the challenges facing economies with fixed exchange rate regimes. As is well known, when the exchange rate is fixed, fiscal policy is often the sole macroeconomic instrument that the authorities can use to address output volatility. But there was a view that, to mitigate risks to the fixed exchange rate regime, countercyclical fiscal policy should be used sparingly and only under exceptional circumstances. And, such stimulus must not compromise the medium-term sustainability of fiscal policy.

The paper from the Hong Kong Monetary Authority discusses the central role of fiscal reserves in Hong Kong's currency board arrangement. Historically, the government has followed a very prudent fiscal policy with a view to accumulating substantial fiscal reserves. An essential purpose of such reserves has been to underpin investors' confidence in the fixed exchange rate, but they have also helped to cushion the economy against adverse shocks. Saudi Arabia has followed a somewhat different strategy. As noted by Al-Hamidy in his paper, the government has pursued an active fiscal stabilisation strategy by paying off debt when oil prices are high and spending more when they are weak.

Notwithstanding the recent positive role of fiscal policy, there was a broad agreement that, beyond allowing the automatic stabilisers to work, the use of countercyclical fiscal policy should be limited. Some participants argued that crisis times are very different from normal cyclical downturns, when monetary policy is expected to do much of the output smoothing. To the extent that extraordinary monetary easing in advanced economies has helped many EMEs to pursue an aggressive stabilisation policy, it is unlikely that they would be able to repeat the recent experience in other times. In addition, authorities should try to avoid the unintended consequences of fiscal policy on the economy, which could arise from difficulties in measuring the cyclical stance in real time, uncertainty about fiscal multipliers and lags in fiscal policy. The paper prepared by Tomŝik provides several measures of cyclically adjusted budget deficits for the Czech Republic, highlighting some of these issues.

Nevertheless, there was a view that countercyclical fiscal policy could be used selectively to reduce some of the monetary policy challenges stemming from capital flows. For instance, fiscal tightening could be substituted for monetary tightening to address inflation pressures when capital inflows are attracted by large interest rate differentials. As Araújo, Azevedo and Costa show in the case of Brazil, a contractionary fiscal policy brought about by spending cuts could have significant, persistent effects on inflation. Yörükoğlu and Kilinç make similar arguments for using countercyclical fiscal tightening in Turkey.

Fiscal policy and interest rates

Another aspect of fiscal and monetary policy interaction explored at the meeting was the impact of fiscal policy on interest rates. In theory, the impact depends on whether the private sector is Ricardian or non-Ricardian. In a Ricardian world, fiscal deficits and debt have no consequences for interest rates, as the private sector saves the full extent of discounted tax liability implied by a rise in the fiscal deficit. In a non-Ricardian world, however, changes in fiscal deficits can lead to changes in interest rates.

The classical mechanism is the "crowding out" hypothesis, where higher fiscal deficits, with an unchanged money supply, lead to higher interest rates. In economies with fiscal

dominance and a reliance on foreign credit, the mechanism that prevails is the default risk premium on government debt. For instance, in Turkey, as noted by Yörükoğlu and Kilinç, external bond spreads had risen above 10 percentage points during the 2001 Turkish fiscal crisis. Several Latin American economies saw similar bond spreads during the 1990s and 2000s.

Several country papers and Deputy Governors found that stronger fiscal balances and lower debt levels were followed by lower interest rates in EMEs. Indeed, one of the findings of Montoro, Takáts and Yetman is that the estimated equilibrium interest rates for EMEs (represented by the constant term of the Taylor rule) have been negatively correlated with the budget balances as a percentage of GDP. Although the link is weak, their results are consistent with a permanent reduction in interest rates in EMEs.

Vargas, González and Lozano reach similar conclusions for Colombia. They note that not only have the country's sovereign spreads fallen sharply following the recent fiscal consolidation, but they have also become less sensitive to global risk aversion. According to their estimates, about 60% of the decline in Colombia's EMBI spread between 2002 and 2011 (excluding 2008 and 2009) could be attributed to local factors, particularly reductions in government currency mismatches and the government debt-to-GDP ratio. As noted by the authors, a permanent reduction in the long-term interest rate would have important implications for monetary policy not only by driving down the natural interest rate (the rate that would prevail with zero inflation and output gaps) but also by leading to changes in the equilibrium real exchange rate.

Nevertheless, there was also a view that the recent developments in long-term interest rates should be interpreted with caution. Real long-term interest rates have fallen across the world, and disentangling global and local factors is difficult. A prolonged period of very easy monetary policy in industrial countries, the strong demand of EME central banks for highly rated bonds, and global risk aversion have driven real long-term rates to zero, or even negative. These conditions will not last forever.

Future fiscal risks

Worries about the medium-term sustainability of fiscal policy in EMEs surfaced prominently in the discussions. First, fiscal deficits and public debt levels are still high in a number of EMEs (for instance, in Hungary and India). Second, questions remain about the measurement of fiscal balances and public debt in several countries. The paper prepared by the People's Bank of China points to a number of issues regarding the coverage of the fiscal balance. In China, although the government budget covers central and local finances, not all items of local government revenue and expenditure are included; in addition, the reported budget balance excludes the profits and losses of state-owned enterprises.

Third, although explicit government liabilities have moderated in many EMEs, contingent liabilities remain high. Future liabilities related to implicit government guarantees to the financial system are difficult to assess accurately in many countries As pointed out in the paper prepared by Kirakul, in Thailand growing state-sponsored programmes have led to a sharp rise in implicit liabilities in recent years. In China, the People's Bank of China notes that some of the local government liabilities, which are not covered by government debt statistics, require careful monitoring.

Finally, many EMEs are ageing fast, and a large part of population, currently outside any social security systems, has to be ultimately covered by a formal pension system. This will put considerable pressure on the fiscal system in future. As Montoro, Takáts and Yetman summarise in the annex to their paper, the old-age dependency ratio in EMEs is expected to rise from an average of 11% in 2011 to 27% in 2040. While the impact of this rise will vary across regions and countries, depending on pension systems, going by the experience of industrial countries, the share of health and pension expenditure in GDP is expected to rise steadily in EMEs in the next decade. However, public policy reform can greatly reduce the

fiscal burden of ageing populations. As the paper by Jędrzejowicz and Koziński shows, ageing-related expenditures are projected to decline in Poland thanks to pension fund reforms, while in all other EU member countries they are set to increase.

3. Local currency bond markets and central bank policies

Following a series of financial crises in previous decades, many EMEs started to develop local currency bond markets in the beginning of the 2000s. Local currency bond markets help achieve several objectives: completing markets; reducing currency and maturity mismatches; diversifying financing sources; and strengthening the monetary transmission mechanisms. In many EMEs, central banks have often played a critical role in nurturing these markets. One important issue is how far these markets have developed in the past decade and what difference they have made to central bank policies, particularly in the conduct of monetary and financial stability policies. The meeting provided an opportunity to study these issues.

The BIS background paper on "Developments of domestic government bond markets in EMEs and their implications" by Mehrotra, Miyajima and Villar provides a brief review of developments in this market. As reliance on foreign debt declined, the total stock of domestic debt securities issued by emerging market governments increased from about $1 trillion in 2000 to $4.4 trillion by 2010. The average remaining maturity of government local currency debt has roughly doubled over this period, from 3.5 years to seven years, with the longest debt maturity issued by EMEs being 28 years in 2010 compared to 14 years in 2000. The authors note that the expansion of domestic currency bond markets has been led by many factors including better domestic policies, lower inflation, reduced external financing needs and higher domestic saving in EMEs.

Implications for the conduct of monetary policy

One reason why local bond markets matter for monetary policy is that they increase the scope for long-term domestic currency financing, thus reducing currency and maturity mismatches. With borrowers' and lenders' financial health becoming less sensitive to changes in the exchange rate and interest rate, monetary policy can squarely focus on stabilising output and inflation. In the past, to prevent widespread bankruptcy among firms, many EMEs with large foreign currency debt were forced to raise interest rates during a downturn.

Several country papers and the discussion at the meeting confirmed that the development of domestic bond market has led to a reduction in currency mismatches in many EMEs. Mehrotra, Miyajima and Villar present a number of indicators for currency mismatches in EMEs (Table 3 in their paper). Their finding is that since 2000 currency mismatches have fallen sharply, particularly in Asia and Latin America where most countries now enjoy net foreign currency asset positions. The paper from Peru (Rossini, Quispe and Loyola) argues that the government's switch from external to domestic financing prompted the de-dollarisation of the banking system, shifting the focus of monetary policy away from the exchange rate. The papers from Israel and Colombia discuss similar evidence for the impact of recent reduction of currency mismatches on monetary authorities' response to adverse shocks.

The discussion also pointed to a number of challenges facing EMEs in monitoring currency mismatches and reducing the risk of future build-ups of foreign currency debt. One source of concern was that demand for foreign currency loans could increase on expectations that interest rates in emerging economies would remain above those in advanced economies causing EM currencies to appreciate. A second source of concern was that speculation about future exchange rates could prompt firms to shift currency mismatches to imperfectly monitored and regulated derivative markets. One view was that commitment to a floating

exchange rate was essential to prevent excessive currency speculation. Another was that central bank intervention in the foreign exchange markets should be made more predictable, so that markets have less scope for speculating on the exchange rate.

Implications for the monetary transmission mechanisms

A well developed sovereign yield curve is important for pricing risker assets and strengthening the interest rate and wealth channels of monetary policy. It also increases the role of the expectations channel of monetary policy as anticipation of central bank actions gets priced into forward curves, with implications for the borrowing and lending rates in the economy.

The discussion was generally supportive of the view that the recent initiatives to deepen bond markets have strengthened the transmission channels of monetary policy. In most EMEs, governments have made efforts to reduce reliance on indexed-debt and floating-rate debt and increase financing through fixed rate debt, leading to the development of a domestic yield curve. Based on econometric work, the paper from Colombia argues that lower government currency mismatches and a deeper fixed rate domestic public bond market seem to have strengthened the response of market interest rates to monetary policy shocks.

However, as noted in the paper by Guinigundo from the Philippines, possible interest rate repression stemming from reduced issuance of government securities could lead to distortions of the yield curve. In the Philippines, yields on Treasury bills, which are often used as a reference rate for pricing other loans, have fallen sharply because the government has rejected bids in auctions. This had led to confusing signals about monetary policy. This problem is likely to be even more severe in countries with persistent fiscal surpluses. Mainly to develop a domestic yield curve, some fiscal surplus governments have opted to issue bonds by overfunding their budgets. As noted by the paper from the Monetary Authority of Singapore (MAS), the government of Singapore is an interesting example of this trend in that its debt issuance is wholly unconnected to its fiscal requirements. While the MAS issues government bonds regularly to develop the yield curve, supplemented recently by its own bonds, it retains the proceeds from the sale of securities in a special government account to meet interest payments and repayments.

Most Deputy Governors felt that diversification of the investor base is critical in boosting liquidity and reducing bond market volatility. As noted in the paper by Sidaoui, Santaella and Pérez, a more diversified investor base in Mexico has reduced the impact of idiosyncratic shocks on bond prices. The authors attribute this development to the growth of domestic institutional investors (particularly pension and mutual funds), leading to reduced concentration of bond holdings in the hands of any one investor category. A diversified investor base has contributed to a more stable pattern of investment by institutional investors.

Several participants argued that greater foreign participation in domestic bond markets can on balance have positive financial stability implications, particularly in the long run. However, other participants highlighted that foreign inflows could numb monetary policy transmission and increase financial stability risks. In many EMEs, strong foreign capital inflows have compressed domestic yields, reducing the impact of monetary policy tightening. In addition, foreign inflows could be driven by carry trade incentives and are inherently volatile as highlighted in several country papers (eg Indonesia, South Africa and Thailand). Therefore Thailand has introduced a withholding tax on non-resident investors, while Indonesia has adopted measures to manage capital inflows and resultant excess liquidity. In this respect, the paper from Chile suggested that short-term financial volatility from foreign ownership may be mitigated by allowing domestic funds to invest abroad. As home bias increases during times of stress, domestic pension funds in Chile can absorb the foreign selling of domestic bonds.

4. Central banks and public debt management

The meeting's final session focused on central banks' involvement in debt management and its macroeconomic and monetary policy implications. Presently, the issue is being debated in advanced and the emerging market economies, as central banks have expanded their balance sheets sharply. Views differ widely about the role central banks should take in debt management (see BIS (2012)).

In the advanced and emerging market economies alike, governments – or central banks on their behalf – manage public debt with several objectives in mind: eg to keep interest costs and refinancing risks to a minimum, ensure an adequate supply of risk-free assets in the economy and maintain a stock of short-term securities so that banks can adequately manage their liquidity risks. Yet microeconomic objectives are not the sole purpose behind an active debt management policy. In recent years, central bank interventions in debt markets have been motivated by macroeconomic considerations too; that is, to gain more control over the long-term interest rate or the exchange rate. The working assumption behind this motivation is that different assets held by private agents are imperfect substitutes for each other. Consequently, the central bank affects their relative prices (ie the asset returns) by changing the quantity of their supply. In the case of the yield curve, the central bank can alter the relative supply of short- and long-term bonds to manage the term structure.

In emerging markets, as noted by Filardo, Mohanty and Moreno in their BIS background paper on "Central bank and government debt management: issues for monetary policy", central banks have become a major issuer of domestic debt securities in the past decade. The authors highlight three salient trends about the size, issuance and maturity of the outstanding stock of debt securities. First, official debt securities issued by EMEs (government plus central banks) as a whole have increased from 19% of GDP at the end of 2000 to 29% of GDP at the end of 2010; the debt securities issued by central banks constitute 10–40% of GDP in several countries. Second, most debt securities issued by the central banks are short-term, with an average maturity of less than one year. Finally, partly reflecting central bank issuance, the share of outstanding short-term debt securities in total official debt securities remains high in EMEs, at about 37% of GDP at the end of 2010.

Several perspectives on these developments were discussed at the meeting. One concerned the primary motivations behind central bank debt management and whether such motivations systematically differed from those of the government. There was a consensus that in many economies, central bank debt issuance has been driven by exchange rate and monetary policy considerations. When central banks intervene in the foreign exchange market to resist appreciation pressures on the exchange rate, they issue their own debt securities to banks to ensure that short-term interest rates do not fall below their policy rate target.

At an operational level, the participants emphasised the need for central banks to have sufficient financial resources to absorb potential financial losses when altering the size and composition of the debt. On the one hand, debt issuance by central banks exposes them to interest rate risks, potential losses stemming from the positive interest rate carry (issuing high-yielding domestic bonds to finance low-yielding foreign assets) and the costs of rolling over debt at inopportune times. On the other hand, the increased scarcity of government securities implies that central banks have to rely increasingly on their own securities for sterilised intervention.

Despite the potential benefits of actively managing the debt structure, some central banks have recently reduced or suspended issuance of their own securities. For instance, as noted in the paper by Sidaoui, Santaella, and Pérez, the Bank of Mexico has stopped issuing its own securities in order to allow for more domestic issuance by the government. This is expected to enhance market liquidity for government debt and lead to further reductions in currency and maturity mismatches. Similar efforts have been taken by the Bank Indonesia to reduce issuance of its own securities (see the paper by Hendar).

A second perspective that arose in the discussion was the role of short-term debt securities in influencing the effectiveness of monetary policy. There is a long-standing view that issuance of short-term government securities is akin to monetary deficit financing. Banks can, in particular, easily sell or leverage up on short-term securities and then expand credit to the private sector (Tobin (1963)). Converting short-term debt into long-term bonds ("funding") reduces the liquidity of these assets because bonds cannot be liquidated without a capital loss. This is why selling long-term government bonds is regarded as non-monetary financing. For instance, the authorities in many advanced economies have adopted limits on short-term debt issuance by the government.[3]

In order to assess the magnitude of this potential source of liquidity, Filardo, Mohanty and Moreno update Tobin's analysis for EMEs. They find that the share of highly liquid liabilities (the sum of monetary base and short-term debt of maturity of less than one year, adjusted for mandatory reserve requirement on banks) in official sectors' combined liabilities ranged between 15% and 90% in EMEs at the end of 2010. They also find a positive correlation between this liquidity measure and the expansion of bank credit to the private sector.

The paper by Gandhi notes that, in the Indian context, large government borrowing requirements have created significant challenges for the Reserve Bank of India in coordinating debt management and monetary policy. The RBI typically has to cope with persistent structural liquidity in the banking system, which needs to be managed carefully to ensure smooth transmission of monetary policy actions.

Central banks that issue debt can use it to help reduce their reliance on other, more distortionary monetary policy tools. While the issuance of short-term debt may be seen as inflationary in some situations, it also reduces the need to resort to non-market policy instruments such as reserve requirements that impede the development of financial markets over time. In addition, the development of a market in short-term local currency debt can have positive effects on that of the inter-bank market for collateralised lending.

A final perspective discussed was the role of active debt management in influencing the yield curve, particularly in volatile financial market conditions. The relevant channel is the term premium, which can change depending on the relative demand and supply for various securities. In emerging markets, as noted by Filardo, Mohanty and Moreno, given their relatively underdeveloped bond markets and a shortage of EME high-quality assets, the term premium is likely to be more sensitive to changes in demand for various debt maturities. A rising share of foreign investors in EME local currency bond markets has added further complexities. There is significant evidence that the spread between the short- and long-term yields has fallen sharply in many EMEs in recent years, although it is not immediately clear whether such a trend reflects an anticipation of future monetary easing or a reduction in the term premium associated with strong demand for long-term government paper.

The discussion at the meeting also highlighted the impact of strong capital flows on domestic capital markets and raised the possibility that active debt management could be used as a policy tool to enhance financial stability. As noted by Oh in his paper, the recent drop in term spreads in Korea because of increased demand by foreign investors created significant challenges for the monetary authority as it was raising policy rates in response to upward inflation pressures. It remains an open question whether more active debt management could achieve a better balance of supply and demand for various debt maturities.

---

[3] Provided, of course, that the authorities do not support the bond market. Patel's classic paper is lucid on this point (reprinted in Khatkhate and Reddy (2012)). Until the late 1970s, many central banks used a liquid asset ratio to control bank credit. The policy was based on the view that long-dated bonds absorb liquidity from the banking system, thereby acting to tighten monetary policy (see Allen (2012) for an application to the UK).

References

Allen, W (2012): "Government debt management and monetary policy in Britain since 1919", in "Threat of fiscal dominance", *BIS Papers,* no 65, May.

Bank for International Settlements (2003): "Fiscal issues and central banks in emerging economies", *BIS Paper*, no 20.

_____(2012): "Threat of fiscal dominance?", BIS Papers, no 65, May.

Patel, I (2012): "Of economics, policy and development: an intellectual journey by I.G. Patel", D Khatkhate and Y V Reddy (eds), Oxford University Press.

Tobin, J (1963): "An essay on principles of debt management", in "Essays in Economics – Volume 1: Macroeconomics", North Holland.