# Macroprudential policies, commodity prices and capital inflows

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## Introduction

The 2008–09 global financial crisis highlighted the extent of externalities and interconnectedness in financial markets. This underlined the importance of going beyond supervision and regulation of *individual* financial institutions to implement measures designed to limit risks to the overall financial *system*. A proper understanding of systemic risks cannot be obtained merely by adding up the risks to individual financial institutions, since problems at one institution can have domino effects. In addition, procyclicality in the financial system can lead to excessive credit growth in the aggregate, even though individual banks may seem to be behaving responsibly. In other words, it is important to supplement a *microeconomic* approach to financial regulation with what are now generally termed *macroprudential* policies that aim to limit systemic risk and adjust regulation in response to economy-wide variables. Such policies address shocks and endogenous mechanisms that could potentially destabilise the financial system as a whole, and thereby cause serious damage to the macro economy.

An important source of shocks for African economies is changes in the value of exports of primary commodities, and associated inflows of capital. African economies are typically more dependent on one or a few commodity exports than are countries on other continents. An increase in the world price for the commodity or a large increase in a country's supply can have a pervasive impact on the domestic economy. For example, the expansion of bank balance sheets and credit could lead to overheating of the economy and higher inflation. The procyclicality of bank lending can amplify the cycle, aggravating the eventual downturn if the shock proves temporary, with potential consequences for financial system stability. To some extent, traditional monetary and fiscal policy tools can be used to dampen the amplitude of the cycle. For instance, tightening monetary policy can choke off some of the demand for credit and lead to exchange rate appreciation, limiting inflationary effects. However, if the shock is temporary this may produce undesirable exchange rate appreciation, and induce "Dutch disease" problems in other sectors. It may be desirable instead to consider other, macroprudential policy tools that limit credit growth in a more targeted way.

While there is a widespread consensus on the need to consider such macroprudential policies, there is much less agreement on what tools should be used, how they should be designed, and how they would interact with other policies, including microsupervision, monetary and fiscal policies, and capital

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controls. It also is true that appropriate policies will need to differ from country to country, as the extent of economic and financial development, the economy's degree of openness to outside influences, and the existing institutional division of responsibilities for regulatory and macroeconomic policies – among other factors – should come into play.[2]

This short note does not pretend to survey the growing literature on macroprudential policies,[3] let alone to offer prescriptions for the design of such policies for African countries. Instead, it has the more modest aim of identifying some circumstances in which macroprudential policies may be desirable, while pointing out considerations that might argue for the choice of one or another macroprudential policy tool. The goal of the paper is to promote reflection and stimulate discussion of how macroprudential policies may be used to resist some of the undesirable effects of commodity booms and busts.

We will start with an overview of the importance of commodity exports for African economies. We then make the case for macroprudential policies and provide a catalogue of some of the tools that have been implemented or considered for use. Issues related to the practical use of these policies, and their interaction with other policies – specifically monetary policy and capital controls – will then be considered. Finally, governance issues – what institutions are given which responsibilities in this area – will be raised. Given the range of policy options and the complexity of the financial and real-sector interactions – many of which are not fully understood – it will be obvious that easy solutions are not available. Instead, countries will have to feel their own way, while benefiting wherever possible from the experience of others.

## 1. The importance of commodities for African economies

Primary commodities, including agricultural products and non-renewable resources, are an important source of exports and fiscal revenues for many African countries (Table 1). This is especially true of oil-exporting countries, where oil often constitutes over half of the country's exports by value and oil royalties and taxes are a dominant source of budget revenues. In addition, the exploitation of non-renewable resources, because capital-intensive, often requires foreign capital, with potential effects on domestic liquidity, the exchange rate, and foreign exchange reserves.

Commodity revenues and inflows pose important challenges for macroeconomic and financial policies. The dangers of being afflicted by the "resource curse" (Auty (1993)) are well recognised. Many countries with abundant resources have found that resource revenues can fuel corruption, economic instability and domestic conflict. It is clear that good governance is essential for mitigating those problems, and better governed countries, such as Botswana, have managed to put their resource revenues to good use, supporting economic development and an improvement in the standard of living of the population.

[2] See Turner (2012).

[3] Galati and Moessner (2011) provide a review of the literature, some of which dates from well before the recent financial crisis.

The macroeconomic challenges in commodity-exporting countries relate to the instability those revenues and capital flows create and the resulting spillovers onto the financial system and the non-resource-producing sectors. Commodity prices, typically determined on world markets, are largely exogenous to African countries; they are also much more volatile than manufactured goods prices (Chart 1). Resource-exporting countries must therefore adapt their policies to mitigate the unfavourable effects of price volatility.

Importance of resource exports and revenues

Table 1

| | Fuel exports in 2011 (% of merchandise exports)[1] | Ores and metals exports in 2011 (% of merchandise exports)[1] | Resource revenue in 2010 (% of total government revenue) |
|---|---|---|---|
| Algeria | 97.20 | 0.26 | … |
| Angola | … | … | 75.90 |
| Botswana | 0.40 | 8.44 | 31.30 |
| The Democratic Republic of Congo | … | … | 26.50 |
| Egypt | 31.70 | 6.00 | … |
| Ethiopia | 0.00 | 1.16 | … |
| Ghana | 54.08 | 1.83 | 3.70 |
| Kenya | 4.30 | 2.03 | … |
| Lesotho | 0.02 | 0.11 | … |
| Malawi | 0.10 | 8.82 | … |
| Mauritius | 0.00 | 0.73 | … |
| Morocco | 1.07 | 11.68 | … |
| Mozambique | 16.28 | 50.62 | … |
| Nigeria | 87.13 | 1.08 | 72.20 |
| Seychelles | 0.00 | 0.00 | … |
| South Africa | 11.24 | 35.12 | 2.00 |
| Swaziland | 1.26 | 0.54 | … |
| Tanzania | 1.19 | 35.44 | … |
| Tunisia | 14.18 | 1.56 | … |
| Uganda | 1.21 | 1.90 | … |
| Zambia | 0.51 | 85.97 | 10.90 |
| Sub-Saharan Africa | 33.39 | 17.04 | … |

[1] For Kenya, Morocco, Nigeria, Tunisia, Uganda, Zambia and Sub-Saharan Africa, 2010, for Lesotho 2009, for Seychelles 2008 and for Swaziland 2007.

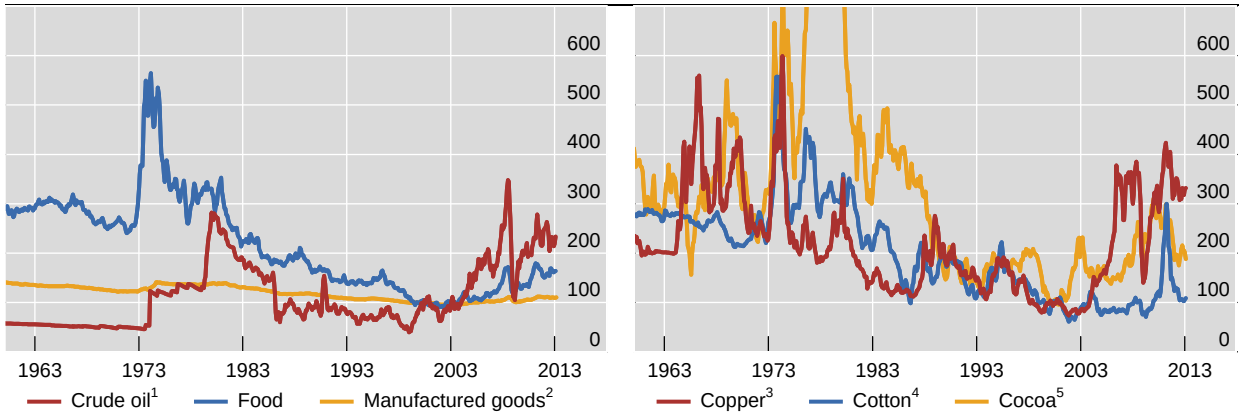
Sources: World Bank; IMF *Regional Economic Outlook*, April 2012.

The volatility of resource revenues has deleterious effects on economic development. Countries undertake ambitious spending plans when resource revenues are plentiful, but when they decline, governments are often unwilling or unable to reverse course. They take on excessive debt in some cases, pledging future oil revenues to obtain it, and this detracts from a rational and effective development strategy and mortgages the future (Bainomugisha, Kivengyere and Tusasirwe (2006)). The volatility of world commodity prices and the consequent resource revenues – as well as their non-renewable nature – emphasise the

importance of budgetary procedures that are based on conservative revenue assumptions and the need to constitute resource funds or "funds for future generations" that mandate saving some of the revenue (Davis et al (2001)). But strong institutions and good governance are needed to ensure that such funds are not diverted, as has been the case in Nigeria and Cameroon, among other countries, in the past.

Commodity and manufactured goods prices

In real terms, as deflated by US consumer price index; 2000 = 100 Graph 1




[1] Crude oil (petroleum), West Texas Intermediate 40 API, Midland Texas. [2] United States, producer prices, manufactured goods [3] Copper, grade A cathode, LME spot price, CIF European ports. [4] Cotton, Cotton Outlook 'A Index', Middling 1–3/32 inch staple, CIF Liverpool. [5] Cocoa beans, International Cocoa Organization cash price, CIF US and European ports, index exceeds 700 between April to May 1974 and between August 1976-March 1980 with a maximum value of 1362.

Sources: IMF; Datastream; national data.

Strong resource revenues and capital inflows can lift the real exchange rate, crowd out other sectors (particularly agriculture and manufacturing) and encourage imports – the so-called "Dutch disease." Thus, countries with large resource sectors progressively get more dependent on them, as other traditional productive activities are crowded out. Inflows can also augment domestic liquidity and cause the banking system to amplify the economic and financial cycle. They may cause banks to take on excessive risk by lending their abundant liquidity to projects that are not viable, threatening financial stability when the boom becomes a bust. Procyclicality and dangers to the financial system make it desirable to consider macroprudential policy tools as a means of augmenting traditional monetary and fiscal policies in order to dampen fluctuations and safeguard the financial system.

## 2. The case for macroprudential policies

In general, macroprudential policies[4] aim to fill the gaps in what was often viewed as the "standard policy framework" (at least before the crisis): financial regulation is

[4] As detailed in Galati and Moessner (2011), the term macroprudential has been given different meanings and reflects distinct motivations, but broadly speaking refers to policies that address risks to the financial sector as a whole.

devoted to maintaining the soundness of individual financial institutions, and macroeconomic policies ensure price stability and growth in output. The "standard policy framework" is too simplistic because of the complex interactions and externalities among financial institutions, two-way feedbacks between the financial and real sectors, and risks that financial cycles may develop well ahead of real cycles – causing problems that are beyond the radar when policymakers look only at real variables and inflation, and ignore financial variables.

There are two obvious difficulties with a simple framework in which financial regulation and macro policies are viewed as separate. First, such a framework pays too little attention to systemic risk, that is, problems that threaten the health of the financial system as a whole. If regulation focuses solely on devising rules that can be applied to financial institutions when they are examined separately, by definition it cannot take into account macro risks: no agency has the responsibility for overall financial stability.[5] What could those macro risks be? Financial institutions are interconnected in a variety of ways. They may participate in an interbank market, meaning that the risks of counterparty default and liquidity drying up need to be taken into account. Liquidity in financial markets and the soundness of each financial institution will depend on the stability and confidence of the financial sector as a whole. Problems in a single – especially a large – institution will therefore tend to spill over to others. Such problems may ultimately require the monetary and fiscal authorities to recapitalise at public expense a number of financial institutions. Banks provide essential services by operating the payments system and ensuring the flows of credit needed to keep the real economy going, and they cannot be allowed all to go under.

A second problem with the simple "standard policy framework" is that the financial sector can exhibit cycles that are self-amplifying. This can lead to excessive booms and busts that could be avoided by early treatment with appropriate policies. One symptom of this procyclicality can be large fluctuations in the overall level of credit growth (Borio (2003)). Wide experience in advanced and emerging market economies has shown that a credit boom – for instance triggered by capital inflows, speculation in housing markets, or high world prices for a country's commodity exports – can sow the seeds of a subsequent bust, with widespread damage to the overall economy.

Supervisory policies can attenuate the procyclicality of the financial system by making capital requirements vary with the cycle, introducing forward-looking provisioning, and building up adequate buffers in good times that can be used in periods of stress, as well as introducing liquidity requirements.[6] However, there are disagreements about how to implement such policies in practice.[7] Commodity booms in Africa have shown many of the symptoms of procyclicality mentioned above. Increases in credit have gone hand in hand with increased commodity export revenues (Annex Table A1). The period 2003–05 saw very large increases in commodity prices, particularly for crude oil and metals. Oil exporters (Algeria, Angola, Nigeria) and metal-exporting countries (Congo, South Africa, Tanzania,

[5] See another paper for this meeting, "Financial stability objectives and arrangements – what's new?" for an elaboration of the concept of financial stability and different governance models for achieving the objective.

[6] See BCBS (2010; 2011).

[7] See, for example, Hahn et al (2012); Turner (2012) and Ryoo and Hong (2011).

Zambia) saw strong real credit growth to the private sector, in several cases continuing into 2006–08, although by this time commodity price increases were moderating (Annex Table A2). High credit growth led to inflation, which more than offset nominal exchange rate depreciation. Consequently, real exchange rates appreciated for most of these countries. A notable exception was South Africa, where the inflation targeting regime was able generally to keep inflation under control, and there was little trend real appreciation – although there were substantial fluctuations. Nevertheless, South Africa faced some of the financial stresses associated with the 2001–07 commodity price boom, as discussed by Mboweni (2007). They included concern about the exposure of banks and pension funds to commodity prices, foreign exchange exposure, management of windfall gains, and resisting the second-round effects of higher commodity prices on inflation.

Nigeria experienced a much more severe credit cycle and financial crisis associated with the oil price boom. Oil-related inflows and loose monetary policy produced a cumulative real growth of credit to the private sector of 235% over 2006–08 (Annex Table A1). The onset of the global financial crisis and the fall in oil prices late in 2008 increased non-performing loans, leading to bank failures and intervention by the Central Bank of Nigeria. In 2009–11, credit to the private sector contracted by 33%.

## 3. Macroprudential policy tools

There is some ambiguity concerning what are specifically macroprudential instruments, since some policies that affect the stability of the financial system may also be aimed at other targets.[8] For instance, microregulatory measures certainly affect financial stability, even if they may not be sufficient to ensure it. Monetary and fiscal policies will also undoubtedly affect financial stability, because of their impacts on economic activity, the level of asset prices, and the supply of credit. The question remains, however (to be discussed further below), whether monetary policy should actually be targeted at financial stability in addition to being assigned to maintain low inflation and adequate economic activity. The following table gives examples of instruments that can serve prudential aims – whether micro- or macroprudential. If they are specifically designed to address systemic risk, they can be said to be macroprudential in orientation.

A number of the instruments listed in Table 2 can address threats to financial stability caused by commodity price booms, in particular, instruments that affect bank balance sheets directly. These include: adjustment to risk weights, rules on loan loss provisioning, reserves deposited with the central bank, and limits on interbank exposures. Other instruments such as caps on the ratio of debt service to household income, and rules on currency mismatches, if already in place when a commodity price boom develops, should help mitigate its effects.

[8] Hannoun (2010) lists various policy frameworks that influence financial stability.

Examples of instruments serving prudential aims Table 2

| Rules governing | Measures |
|---|---|
| Bank loans | Caps on loan-to-value for mortgages |
| | Caps on the ratio of debt service to household income |
| | Rules on the reference interest rate used for mortgage lending |
| | Rules on currency mismatches of borrowers |
| | Ceilings on credit growth (aggregate or by sector) |
| Bank balance sheets | Countercyclical capital ratios (possibly including additional capital charges for the speed of any increase in bank lending). Dynamic provisioning |
| | Adjustment to asset risk weights |
| | Rules on loan loss provisioning |
| | Caps on loan-to-deposit ratios, core funding ratios and other liquidity requirements |
| | Bank reserves deposited with the central bank |
| | Limits on interbank exposures (domestic or cross-border) |
| | Capital surcharges for systemically important institutions |
| Collateral used in wholesale funding | Prevention of procyclical variation in minimum margins or haircuts (or making such variation countercyclical) |

Source: Turner (2012).

A study commissioned by the IMF's executive board reviews the effectiveness of 10 macroprudential policies among those listed above, to address four different types of systemic risks, namely (Lim et al (2011, p 9)):

- risks generated by strong credit growth and credit-driven asset price inflation;
- risks arising from excessive leverage and the consequent deleveraging;
- systemic liquidity risk; and
- risks related to large and volatile capital flows, including foreign currency lending.

Each of these risks may be relevant to commodity price booms and busts. The choice of instrument depends on the type of systemic risk faced, though often several instruments were used to target that risk. A number of considerations need to be taken into account in the choice of which instruments to use in particular circumstances. Choices include:

- between a single instrument and multiple instruments. Multiple instruments have the advantage of targeting the same risk from different angles. By analogy with the welfare economics of taxation, the use of many instruments may be less distortionary, and harder to evade, than heavy reliance on just one instrument. Drawbacks of using multiple instruments, however, are the difficulties in implementing them and lack of knowledge about their complex interactions.
- a broad-based versus a targeted approach. A targeted approach may be required for addressing price cycles of a particular commodity, but places more demands on data and analysis.
- rules versus discretion in the application of policies. Rules should be given preference where possible, for instance for dynamic provisioning and capital conservation buffers, but they are not always possible.

- fixed versus time-varying provisions, eg for loan-to-value ratios. In theory, it is useful to vary provisions over the cycle. In practice, however, it may be difficult or undesirable to design automatic rules for such variation. And discretionary policies may prove to be procyclical given the lags involved in recognising the problem, deciding on a course of action and implementing it.
- coordination with other policies. Macroprudential policies that are well coordinated with monetary and fiscal policies will be the most effective. Exactly how they should be linked is, however, complex: see below.

It should not be concluded that every country should try to implement a large menu of possible macroprudential policy measures. Some measures are appropriate for some countries but not others. In some African countries, banks already keep very high levels of liquidity, and further liquidity requirements would have little effect. But it is not necessarily the case that the most advanced economies have made the most use of macroprudential measures; in fact, because emerging market economies are vulnerable to shocks, for instance due to having to borrow in foreign currencies, they have been led to put in place prudential measures to limit currency mismatches and to impose taxes on foreign currency borrowing (Chile is a notable example).

It should also be stressed that macroprudential policies should not be imposed to correct inappropriate monetary and fiscal policies. A credit boom that is the result of excessively low interest rates should not be offset by ceilings on bank lending. In some cases in the past, the very policies that can serve macroprudential purposes were in fact put to quite different uses: for instance, to implement financial repression or to generate low-cost financing for the government by forcing banks to hold government debt as a liquidity requirement.

## 4. Addressing commodity price booms using macroprudential policies

A difficult challenge for policy is to identify the trend and cycle in commodity prices: it is not obvious when a price increase constitutes a sustained rise to a new level, or whether it is just a temporary shock that will be reversed, and, if so, how quickly.[9] This challenge is particularly relevant at present, when the prices of many commodities have risen strongly over the past decade, reversing several decades of stability, or even decline, relative to the overall price level (see Graph 1 above). If prices are permanently higher, then the economy can adjust its spending upward, since the country is now richer. But if increases are temporary, policy should try to offset swings in spending, financial flows and asset prices, since these will go into reverse later.

Fiscal policy in resource-exporting countries is likely to be the primary tool for mitigating the effects of commodity price shocks, especially for exporters of oil and gas, since a significant fraction of the export revenues accrues directly to the government in the form of taxes and royalties. By budgeting on the basis of a

[9] Cashin, McDermott and Pattillo (2004) found that for about half of African countries, the half-life of terms of trade changes was about four years, while for a third of them, it was longer than seven years.

conservative price for the resource, rather than fully reflecting fluctuations in the world price, governments can use fiscal policy in a countercyclical way, smoothing out fluctuations in demand and avoiding unsustainable spending plans. One way of doing so is to use a moving average of commodity prices extending over several years to calculate the revenues that are available for spending, and saving the rest. Accumulated savings should then provide a buffer to cushion the downturn in spending when world prices are below the moving average (Davis, Ossowski and Fedelino (2003)).

Monetary policy may also be called upon to respond to commodity price shocks.[10] In principle, monetary policy should accommodate temporary inflation shocks, since these simply constitute relative price changes, but policy should resist second-round effects that risk building in an inflation spiral. One way of doing this would be to target a core inflation variable that excludes the most volatile (and hence temporary) components. In African countries, given the importance of food and energy in the consumption basket, a measure that excludes them may give misleading signals of underlying inflation pressures, however.

Another dilemma for central banks concerns the "Dutch disease" effects of booms in the price of their commodity exports – particularly resource exports. If monetary policy is tightened to resist inflationary pressures, it may induce an appreciation of the exchange rate that leads to crowding out of non-resource sectors. If the shock is permanent, then this may be unavoidable in the absence of policy measures that boost investment and productivity in the manufacturing sector but, if temporary, it can impart undesirable volatility to the economy and may inflict unnecessary losses on the non-resource sector. If the commodity price boom is accompanied by capital inflows, this heightens the dilemma, since higher interest rates may attract even more foreign capital.

An alternative would be to intervene in foreign exchange markets, acquiring reserves and sterilising their effect on domestic liquidity. However, there are limits to sterilisation, and sterilised intervention may also have fiscal costs if the interest rate on domestic borrowing exceeds that paid on foreign exchange reserves. Sterilisation may thus be incomplete in practice, leading to credit growth that is too strong, suggesting that macroprudential policies to limit bank lending may be desirable. By tightening up on lending criteria, policy can prevent the spillover effects of the commodity boom from leading to later problems for the borrowers (and the banks that lent to them) when the boom ends.

In an economy where the capital account has been liberalised so that domestic residents can borrow abroad, currency mismatches can cause problems when the exchange rate depreciates substantially. Depreciation may make foreign currency debt difficult to service and endanger the solvency of financial institutions. This could threaten the stability of the financial system as a whole. Thus, imposing limits on foreign currency exposure is appropriate when balance of payments restrictions on capital flows are relaxed. Such prudential limits could be varied with the state of the economy, and may be especially necessary during periods of strong capital inflows.

Specific measures to tighten the terms of lending may also be needed, such as reducing loan-to-value ratios or debt-to-income ratios. Such measures may also be

[10] This issue was discussed in a Governors' meeting at the BIS on 23 June 2012.

targeted at specific sectors, depending on the nature of the spillover effects of the increased liquidity of the banking system. It may also be desirable, as suggested by the IMF report cited above, to use several instruments to target a particular problem. Thus, a detailed understanding of the interlinkages between financial and real sectors and indicators of potential financial sector problems will be necessary.

## 5. How to decide when to trigger and when to deactivate macroprudential instruments

While the case for using macroprudential instruments is strong, indicators are needed to help decision-makers judge when such instruments should be applied and when they should be removed. In this respect, they are more complicated than traditional microprudential regulatory instruments, since they combine the macroeconomic policy aim of dampening cycles with the prudential goal of financial stability.

The research on this question is still under way, and will no doubt progress as experience in the use of these tools begins to be gained. Financial cycles are not easy to define, and the term is often used to capture quite distinct amplification or cyclical mechanisms. However, a recent study of the Committee on the Global Financial System points to some key indicators of different aspects of financial cycles (CGFS (2012)), reproduced in Table 3 below. They can be matched to relevant macroprudential policy instruments, and used to decide when and by how much to apply them.

Indicators of financial stress — Table 3

| | |
|---|---|
| Macroeconomic indicators | Broad credit aggregates |
| | Measures of debt sustainability (debt to income, debt service ratio) |
| Banking sector indicators | Stress tests, bank risk metrics |
| | Maturity and currency mismatch |
| | Leverage ratios |
| | Indicators of funding vulnerabilities |
| | Profits and losses |
| Market-based indicators | Asset valuations in equity and property markets |
| | Corporate bond and CDS spreads and risk premia |
| | Margins and haircuts |
| | Lending spreads |
| Qualitative information | Underwriting standards |
| | Asset quality |
| | Credit conditions |

Source: CGFS (2012).

In evaluating the effects of commodity price booms, each of the main indicator types can help identify problems in the financial system. In particular, the spillover effects to the whole economy will likely operate through rapid credit growth, which may show up later in indicators of banking sector vulnerability, excessive valuations in equity and property markets, and lax credit conditions and poor asset quality. In deciding about macroprudential measures, Governor Subbarao of the Reserve Bank

of India has underlined that a major difficulty for regulators is steering a course between Type I errors (imposing buffers too early out of excessive caution) and Type II errors (waiting until it is too late to avert an implosion).[11] Many crises have demonstrated the dangers of waiting too long. But it may be inappropriate for the regulator to act without convincing evidence that problems have already surfaced. And there have been instances of mistimed policies actually accentuating the cycle.

## 6. Prudential measures versus capital controls

The distinction between prudential measures and capital controls is not always very clear-cut, and may depend on the instrument itself as well as the reason it was used (IMF (2011)). For instance, restrictions on foreign currency borrowing and lending may be imposed for balance of payments reasons, or in order to safeguard the soundness of financial institutions. Generalised capital controls of a quantitative nature are more likely to be imposed for reasons other than prudential ones, while market-based controls that target particular types of flows are more likely to be prudential (or macroprudential) in nature. An example of the latter is a tax on foreign currency borrowing that penalises short-term flows to a greater extent than long-term flows. It may be desirable to limit short-term inflows because they can be more easily be withdrawn, causing volatility and financial instability. A tax which is a particular percentage amount of the principal will have a greater effect on the returns for short holding periods and hence, in principle, discourages shorter-term relative to longer holding periods. However, capital controls are subject to evasion, and Chile, which imposed such a tax on various occasions when inflows were substantial, later abandoned it for that reason.

Prudential measures, moreover, may be more likely to be targeted at particular types of institutions whose stability is essential to the economy, such as the banking system. Given the interconnectedness of the financial sector, however, this distinction may be difficult to maintain. Limits on the foreign currency borrowing of banks may be evaded by off-balance sheet transactions, or by the activities of non-bank financial institutions with ties to banks. Banks would thus be indirectly affected by currency mismatch problems through their off-balance sheet activities or their exposure to non-bank financial institutions. This was the case especially during the Asian financial crisis of 1997–98, and demonstrates the importance of macroprudential measures that capture activity outside the banking system.

## 7. Prudential measures, monetary policy and the central bank

Macroprudential measures need to be coordinated with monetary and fiscal policies. A corollary is that macroprudential policies should not be used to offset inappropriately tight or loose monetary policy. For instance, if loose monetary policy is fuelling a credit boom, then monetary policy should be tightened in preference to imposing credit restrictions on lenders. In most circumstances, the desired change

[11] See Subbarao (2011).

in macroprudential policy and monetary policy would be in the same direction. But sometimes these policies may need to move in different directions. For instance, macroprudential policies may be tightened in response to a commodity price boom, but the authorities may not wish to increase domestic interest rates because a currency appreciation has already tightened monetary conditions.

Another issue is what institutions should be responsible for macroprudential regulation: should it be the central bank, another agency, or should there be shared responsibility? In Africa, as in other regions, different institutional models have been adopted for financial regulation. In some countries (Lesotho, Malawi, Seychelles), the central bank is the sole regulator of the financial system, while in Nigeria it is the apex regulator, under which there are various other regulatory bodies. In South Africa, the SARB regulates only the banks, while the Financial Services Board (FSB-SA) regulates the non-bank financial sector; a similar arrangement has existed in Swaziland since 2010. Other countries (Angola, Egypt, Mauritius, Morocco, Tunisia, Uganda, Zambia) entrust regulation of all deposit-taking institutions to the central bank, while having a separate agency or agencies for the regulation of the insurance and capital markets. In Mauritius there is a specific Memorandum of Understanding detailing cooperation between the central bank and the Financial Services Commission. In Algeria, bank regulations are issued by the Monetary and Credit Council, working with the Bank of Algeria, which implements them. In the West African CFA franc zone (UMOA), a separate Banking Commission shares the regulation of the banking sector with the central bank (BCEAO), but the zone's Council of Ministers has overall prudential responsibility, and national finance ministers have a role in approving banking licenses, suspension of operations, and liquidation of financial institutions in their own territories. Other regional bodies regulate non-bank financial institutions in the zone. A similar institutional setup is in place in the Central African CFA franc zone (CEMAC), with the central bank (BEAC) sharing supervisory responsibilities.

There are several institutional models for designing and implementing macroprudential policies.[12] The case for giving the central bank responsibility for macroprudential policies (or, if other agencies are also involved, primary responsibility) is that it is the institution that combines both macroeconomic and financial system oversight. It is often the government institution with the closest links to the market, and such expertise may be in short supply in many countries. In any case, the central bank would need to know of systemic problems in order to carry out its core responsibilities, and thus would have to be involved in some fashion. But the risk exists that giving the central bank responsibility might overburden it, in a context in which many African central banks, because of lack of independence from the fiscal authorities, have not been able to achieve their primary mandate of maintaining price stability.

In countries where another agency already has the responsibility for the regulation of individual firms, then there may be a case for it to share responsibility for macroprudential policies with the central bank. However, a decentralised model, in which one agency supervises banks, another insurance companies and so forth, does not work well in this context, because of the nature of systemic risks and the interconnectedness of financial systems. Thus, a strong case can be made for an

[12] See the "Financial stability objectives and arrangements – what's new?" paper prepared for this meeting.

overarching body – the central bank or another agency, or a coordinating agency – being given macroprudential oversight over all financial sectors. In Morocco, a draft banking law gives the central bank responsibility over financial stability and provides for coordination among agencies to manage systemic risks. Going further, where regional financial integration is significant, it is important to coordinate effectively the macroprudential activities in the different countries of the region, rather than having them operate independently.

## 8. Conclusion

Macroprudential policies are in their infancy, and will evolve as more experience is gained. A large number of tools have been identified, but all are not equally targeted or effective, and the appropriate tool to use will depend on the particular circumstances a country faces – the type of shock, the structure of the economy and the institutional setup. Work based on a cross-country study by the IMF (Lim et al (2011)) cited above, concluded that often several tools could best be used together, and that effectiveness was enhanced by coordination with monetary and fiscal policies. In African economies heavily dependent on commodity exports, macroprudential tools can supplement monetary and fiscal policies to prevent a commodity price boom and bust from causing serious harm to the overall economy.

For African countries, the way forward will be influenced by the evolution of their financial systems and the overall economic environment. A generalised move to more liberalised economies, with reduced controls on capital and flexible exchange rates, increases the power of market forces and improves economic efficiency, but may also require a tightening of prudential regulation. Vulnerability to external shocks with widespread effects on the domestic financial system brings to the fore the usefulness of macroprudential instruments. Nevertheless, it is important to keep in mind that macroprudential policies should not be seen as substitutes for monetary and fiscal discipline – in particular, they should not be used to offset the harmful effects of unsustainable macroeconomic policies.

# Appendix

## Selected macroeconomic indicators

Cumulative percentage change — Table A1

| | Real credit growth[1] | | | CPI inflation[2] | | | Real effective exchange rates[2] | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2003–2005 | 2006–2008 | 2009–2011 | 2003–2005 | 2006–2008 | 2009–2011 | 2003–2005 | 2006–2008 | 2009–2011 |
| Algeria | 50.8 | 41.7 | 23.3 | 7.8 | 14.1 | 15.2 | –6.2 | 1.5 | 0.6 |
| Angola | 68.9 | 310.0 | 76.2 | 174.4 | 41.9 | 46.4 | 58.8 | 49.1 | 3.0 |
| Botswana | 19.1 | 42.9 | 19.3 | 27.7 | 33.4 | 24.1 | –9.1 | –9.0 | 10.3 |
| The Democratic Republic of Congo | 273.6 | 371.4 | –6.0 | 38.3 | 65.8 | 94.5 | … | … | … |
| Egypt | 9.6 | 7.7 | –22.7 | 21.6 | 39.9 | 36.1 | –21.1 | 27.7 | 13.1 |
| Ethiopia | 23.6 | 13.5 | … | 28.7 | 95.4 | 66.8 | 3.0 | 42.0 | –15.2 |
| Ghana | 55.8 | 123.9 | 25.5 | 58.6 | 47.7 | 36.7 | 18.2 | –2.5 | –6.6 |
| Kenya | 3.1 | 33.3 | 37.6 | 32.8 | 30.9 | 33.8 | 20.2 | 8.3 | –8.3 |
| Lesotho | –35.8 | 50.2 | 57.3 | 15.0 | 30.1 | 16.0 | 49.6 | –21.8 | 25.3 |
| Malawi | 68.6 | 191.2 | 104.3 | 45.5 | 30.2 | 25.5 | –22.5 | 8.1 | –10.0 |
| Mauritius | 45.8 | 28.6 | 13.0 | 14.0 | 29.4 | 12.9 | –8.5 | 9.2 | 10.0 |
| Morocco | 22.0 | 63.5 | 28.8 | 4.5 | 9.8 | 1.5 | –4.3 | 3.1 | –7.5 |
| Mozambique | 2.7 | 80.3 | 57.1 | 38.0 | 28.1 | 28.2 | –1.0 | 17.0 | 0.2 |
| Nigeria | 35.8 | 234.8 | –32.6 | 52.0 | 33.1 | 40.5 | 24.6 | 16.8 | 2.7 |
| Seychelles | 49.7 | 43.7 | –12.7 | 5.7 | 91.0 | 3.2 | –15.8 | –44.7 | 12.5 |
| South Africa | 42.8 | 34.5 | –4.1 | 7.5 | 26.9 | 16.7 | 26.5 | –29.0 | 24.6 |
| Swaziland | 94.0 | 24.5 | 18.9 | 16.3 | 29.9 | 17.7 | 18.2 | –14.9 | 13.0 |
| Tanzania | 115.6 | 99.6 | 24.8 | 14.3 | 28.8 | 41.9 | –21.6 | 5.1 | –6.1 |
| Tunisia | 17.0 | 20.5 | 32.5 | 9.6 | 12.9 | 12.1 | –10.6 | –5.1 | –2.5 |
| Uganda | 33.1 | 94.9 | 47.2 | 18.6 | 33.2 | 45.3 | –1.8 | 6.1 | 14.4 |
| Zambia | 46.6 | 148.0 | 4.6 | 59.5 | 37.4 | 27.1 | 68.0 | –8.4 | 1.8 |
| WAEMU (BCEAO)[3, 4] | 34.7 | 54.0 | 41.9 | 5.3 | 14.4 | 5.2 | –1.4 | 11.3 | –8.4 |
| CEMAC (BEAC)[3, 5] | 31.2 | 89.3 | 77.6 | 5.0 | 12.8 | 9.9 | 1.3 | 12.1 | –6.2 |

[1] Credit to private sector deflated by year-on-year changes in CPI, in per cent. [2] End-of-year data. [3] Weighted average based on 2005 GDP and PPP exchange rates. [4] Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo. [5] Cameroon, the Central African Republic, Chad, the Republic of Congo, Equatorial Guinea and Gabon.

Source: IMF.

## Commodity price performance[1]

Cumulative percentage change — Table A2

| | 2003–05 | 2006–08 | 2009–11 | 2012 |
|---|---|---|---|---|
| Crude oil | 101.8 | –30.2 | 138.0 | –10.6 |
| Non-fuel commodities | 30.9 | 4.8 | 49.5 | 4.7 |
| Agricultural raw materials | 5.7 | –13.3 | 48.5 | 3.2 |
| Cotton | 2.4 | –1.9 | 72.1 | –12.7 |
| Coffee | 53.2 | 42.0 | 36.1 | –10.3 |
| Cocoa | –25.4 | 60.1 | –9.1 | 10.5 |
| Metals | 108.8 | –7.1 | 78.7 | 0.3 |
| Copper | 187.3 | –32.2 | 143.4 | 5.4 |
| Gold | 53.6 | 60.0 | 101.2 | 2.6 |
| Iron ore | 121.7 | 149.0 | 95.0 | –5.6 |
| Manufactured goods | 15.6 | 8.2 | 15.4 | 0.9 |

[1] US dollar prices.

Source: IMF, Datastream.

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