Monetary policy in Tanzania: Looking back on 10-years of BoT and IGC contributions

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Overview

This paper synthesises the International Growth Centre's work on monetary policy in Tanzania during its 10 years of involvement in the region, placing it in the context of the wider literature on the topic. It begins with an overview of the primary debates around the theory and practice of monetary policy in sub-Saharan Africa since independence, including recent efforts to modernise operational frameworks. It then describes the Bank of Tanzania's own path to relatively low and stable inflation using money supply targeting, and its ongoing efforts to transition to inflation targeting. It then turns to a discussion of the papers by International Growth Centre authors that have contributed to Tanzania's monetary policy landscape. It concludes with a discussion of avenues for future research.

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1. Introduction

Like many of its peers in Sub-Saharan Africa (SSA), Tanzania has undergone an extended period of low inflation and strong economic growth since the mid-1990s. Much of the credit for this achievement, which stands in stark contrast to the preceding decades of stagnation, is often ascribed to a judicious monetary policy that consistently targeted the supply of money to keep inflation stable. It is this policy, placed in its broader context within the continent and discussed in light of the International Growth Centre's academic and policy contributions, that forms the focus of this paper.

Global best practice on monetary policy has evolved in recent years and has been distilled by the IMF into seven key principles emphasising transparency, priority of goals, and credibility (IMF, 2015). Central banks in SSA, although improving along many of these metrics over the last two decades, have lagged behind in a number of areas, including securing de facto independence, transitioning to price level targeting frameworks, and communicating transparently with markets. Slow progress in these areas coupled with SSA-specific issues, such as vulnerability to supply shocks and weak monetary transmission, have weakened the effectiveness of monetary policy in the region.

At the continental level, monetary policy in SSA has come a long way since its early days after independence. In most cases, central banks have grown from subsidiary financing tools for governments to more independent, transparent, and forward-looking institutions. However, market pressures and the increased potential of modern central banks have put renewed pressure on monetary authorities to continue reform. In response, several countries have embarked on the path to adopting inflation targeting (IT), following the lead of Ghana and Uganda. In practice, this has often meant a gradual transition that incorporates elements from both money supply and inflation targeting frameworks. Tanzania's ongoing transition to inflation targeting is illustrative.

Tanzania's monetary environment has also evolved over time from an early period of strong fiscal dominance and repressed capital markets to liberalisation and fiscal discipline, enforced by IMF adjustment programmes starting in the mid-1990s. The Bank of Tanzania's (BoT) Reserve Money Programme helped bring about the largely costless disinflation of the 1990s (albeit during a favourable global economic expansion), but is now being implemented more flexibly in light of underlying market volatility. The BoT is currently transitioning to IT but will require renewed commitment to fiscal discipline and central bank independence to succeed.

The International Growth Centre (IGC) has been closely involved with the BoT on monetary policy issues over the last decade. IGC papers have contributed to the empirical literature on money market dynamics and directly influenced policy both domestically and within the East African Community (EAC) by improving forecasting and policy-setting precision. As Tanzania moves to inflation targeting and convergence with the East African Monetary Union there is scope for further research in areas such as exchange rate policy and fiscal-monetary coordination within the region.

2. Overview of monetary policy in Sub-Saharan Africa

This section provides a summary of the key developments in the way central banks in sub-Saharan Africa have carried out monetary policy, focusing primarily on the period since 1990. This is to situate the Tanzanian experience in its broader continental context, of which it is a major player. Following Berg and Portillo (2018) throughout, the section begins with a discussion of the primary developments in approaches to monetary policy over time. It then lays out some of the key challenges to effective monetary policy in the region and looks at the ongoing transition towards forward-looking, price anchor frameworks. It concludes with a discussion of the next steps for SSA central banks looking to modernise their approach.

Primary developments in SSA monetary policy since the 1950s

The story of monetary policy in Sub-Saharan Africa begins with independence and can be roughly divided into three eras: the early period of ambitious regimes, financial control, and fiscal dominance lasting into the 1980s; the subsequent period of disinflation and fiscal stabilisation of the mid-1990s and 2000s; and the ongoing transition period of modernisation.

During the colonial era, monetary affairs in sub-Saharan Africa were run through a set of currency boards pegged to European currencies. Following national independence movements starting with Ghana in the late 1950s, the old British-run currency boards rapidly gave way to national central banks, while the CFA Franc Zone and Rand Monetary Area persisted (as they do to this day). Under the leading paradigm of that period, these new central banks were expected primarily to enable state-led development policy.

The subordination of monetary policy to central government objectives continued following the end of the Bretton Woods system in the early 1970s. Monetary policy across the continent typically involved closely managing exchange rates, setting low, fixed interest rates, allocating credit flows to state-dominated firms, and financing budget deficits. This system began to show its limitations by the early 1980s when a combination of internal and external factors plunged the continent into prolonged crisis and demonstrated that central banks were unable to satisfy their primary objective, price stability. Externally, low commodity prices hit primary exports, regional and civil conflicts threatened stability in some countries, and mounting external debts following a period

of major fiscal expansion all contributed to the general downturn. However, internal factors – including increasingly ineffective monetary policy – further compounded these issues. Government pressure on central banks to finance fiscal deficits in an environment of weakening capital controls and increasing money velocity led to large increases in inflation and a rapid deterioration in government fiscal positions. This emergent fiscal dominance undermined central banks' capacity to tackle rising inflation.

In response to these issues, the IMF introduced reserve money programmes across sub-Saharan Africa in the 1990s. This simple, transparent framework isolated the core problem of fiscal dominance by focusing attention on the growth of credit flowing from central banks to governments. Coupled with complementary reforms such as interest and exchange rate liberalisation, explicit fiscal rules, and debt forgiveness programmes, this new central bank framework helped re-establish macroeconomic stability across the continent and set the stage for an extended period of growth and low inflation in the 2000s.

Since the mid-2000s, SSA central banks have entered a period of transition as they look to expand the objectives of their policy regimes and modernise them in line with international best practice and to reflect the growing instability of quantity target frameworks.

Objectives and benchmarks to monetary policy

We turn now briefly to monetary theory to establish a benchmark for assessing contemporary policy regimes in SSA. In terms of objectives, contemporary theory mentions three different aims for monetary policy, each over a different time horizon. The consensus is that the primary, core aim is to provide a nominal anchor to stabilise inflation over the medium run (as some shocks are inevitable). A secondary objective is output stabilisation in the short run. A third objective is to foster the growth of the banking sector, in the long run, to promote savings and encourage the growth of an effective monetary transmission mechanism. This, in turn, facilitates the achievement of the other two objectives by ensuring that the central bank's actions translate into the targeted price and output changes.

To help central banks achieve these objectives, the IMF (2015) has distilled international best practice into seven principles for effective monetary policy:

- Clear legal mandate and operational independence for the central bank

- Price stability as a primary objective of monetary policy

- Numerical inflation objective over medium-term to guide policy actions

- Consideration of output and financial stability implications of policy

- Effective operational framework based on controlling interest rates

- Forward-looking strategy linking objectives and policy

- Clear communications explaining current policy and guiding expectations for future

A key question is whether these principles, developed initially for small, developed economies, also apply to central banks in SSA, particularly following the financial crisis. As argued by Berg and Portillo (2018), the financial crisis appears to have strengthened the case for these principles in general. Inflation targeting (IT) regimes have outperformed their non-IT counterparts, inflation targets appear particularly important to anchor expectations given the appearance of deflation as a risk, and communications have proved essential for ensuring stability. However, the applicability of the framework to SSA specifically is a more contentious issue, given fundamental differences between the structures of economies in the region when compared to developed economies.

Challenges to monetary policy

Central banks in SSA, much like their counterparts across the developing world, face several structural challenges to achieving the three objectives of monetary policy enumerated above. These vary in magnitude, but all have implications for the optimal design of policy frameworks in the region.

Nature of the monetary transmission mechanism: Probably the most fundamental question about monetary policy in the SSA region is whether it can be effective at all in stabilising prices and outputs, and if so, through what transmission channels (interest rates, exchange rates, monetary aggregates, etc.). Given the low levels of financial development in SSA, one would certainly expect that central bank policy interventions would have a more limited effect on aggregate demand and inflation. Additionally, a lack of clarity around policy mechanisms would also dampen their effectiveness. Finally, restrictions on capital or exchange rate movements would limit the power of the transmission through exchange rates.

The empirical evidence on the effectiveness of monetary transmission is mixed. Mishra and Montiel (2013) find weak responses to shocks to monetary policy in developing countries using structural VAR models, concluding that transmission mechanisms are very weak in these settings. (As discussed in detail below, Montiel et al. (2012) reach the same conclusion for Tanzania specifically using a similar approach.) However, Berg and Portillo (2018) argue that this finding is likely due to the unsuitability of VAR estimation to low-income settings rather than a lack of transmission. They point to the effectiveness of policy tightening in the East African Community in 2011, particularly in countries where central banks communicated their policy actions clearly, as evidence of a strong transmission mechanism. Supporting this view, Li et al. (2018) find that LIC-specific issues such as measurement error and frequent supply shocks make insignificant results of structural VAR estimation likely even in the presence of strong transmission mechanisms.

In conclusion, although there is no consensus around the strength of transmission mechanisms in SSA, we have some reason to be optimistic that central banks can be effective in achieving their objectives. Even if transmission is quite weak, the implication for central banks is not to sit back and do nothing, for two reasons. First, they may be able to achieve their desired objectives through more aggressive intervention. Second, the endogeneity of dampening factors such as financial shallowness and policy opacity suggests that central bank can actively improve their effectiveness over time.

Vulnerability to shocks and volatility: Due to their size and economic composition, economies in SSA are particularly vulnerable to supply-side shocks, particularly to international food and fuel prices, domestic food prices and capital flows. This is problematic because, while demand shocks are relatively straightforward to mitigate, shocks to aggregate supply lead to a difficult trade-off between output and price stability in the short run. Policymakers can use exchange rate depreciations to help mitigate these shocks, but inflation spillover is a risk. Another option is to target nominal GDP so that the "losses" from supply shocks are split between output contraction and price increases. However, this approach is challenging in most Sub-Saharan African economies, where GDP data is often imprecise or unreliable. In this context, anchoring inflation expectations through the benchmark principles enumerated above becomes particularly important.

Other considerations: Pressure on monetary policy from fiscal volatility and external revenue inflows can also blunt the effectiveness of monetary policy in SSA. In the first case, although fiscal dominance is largely a relic of the past, government spending in SSA is often pro-cyclical due to resource revenue dependence and political dynamics. Given the perceived costs of monetary operations particularly when central banks have low or negative balance sheet values, this fiscal volatility can pressure central banks to maintain an overly accommodating policy stance. On a related note, concerns about government solvency can constrain monetary authorities from tightening policy, particularly when they are perceived to directly control interest rates (as in inflation targeting regimes).

Another constraining factor in SSA relates to central banks' management of external revenues, especially aid flows and commodity payments. These revenue inflows often have knock-on effects on monetary policy depending on whether the central bank fully sterilises the accumulation of foreign reserves. The close link between fiscal and monetary policy in these cases can attenuate the effectiveness of the latter if not managed consistently. Yet even though these issues complicate matters for monetary authorities in SSA, they further strengthen the case for following international best practice, particularly on operational independence and framework clarity.

How do SSA regimes measure up to international best practice

Having established benchmarks for an effective monetary policy and argued that these are largely applicable to the SSA region, we turn to briefly summarising how central bank arrangements in the region measure up in practice.

Legal mandates and independence: Although the wave of reform that swept through the region in the 1980s brought new charters for central banks which officially guaranteed independence, these have not always been followed in practice. Government pressure on central banks persists in numerous countries, from Ghana to Zimbabwe.

Hierarchy of objectives for monetary policy: Although a broad consensus is emerging around the importance of price stability as the primary objective of monetary policy, in theory, this has not yet translated into consistent policy in practice. Central banks continue to pursue secondary objectives such as output stabilisation and export promotion even when they conflict with price

stability. Exchange rates frequently serve as nominal anchors instead of money supply, which can undermine the effectiveness of monetary policy. The drivers of this confusion tend to be a lack of an inflation objective, policy strategy, or operational framework, all of which make policy vulnerable to deviation or distraction.

Operational frameworks: In contrast to the interest rate targeting frameworks widely used around the world, most SSA countries with floating exchange rates continue to use Reserve Money Targeting (RMT) frameworks first introduced over two decades ago. The figure below illustrates the frequency of operational targets used in the region.

Figure 1: Central bank operational frameworks in SSA
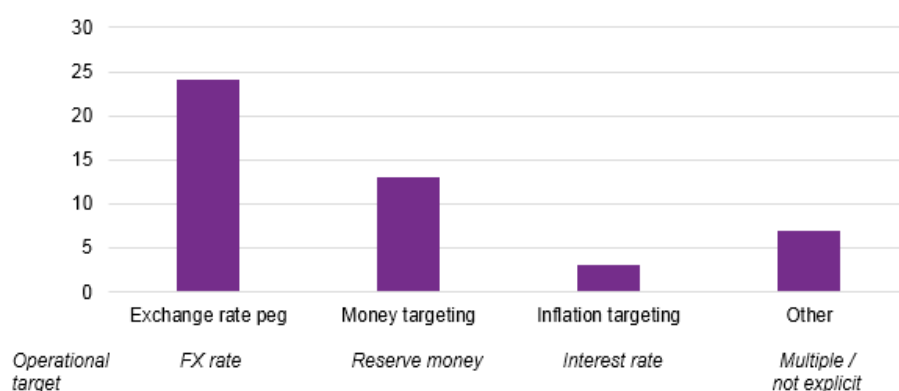
However, countries using money targeting appear to be implementing this framework increasingly flexibly, often missing quantity targets and are moving towards a hybrid framework. In most cases, these deviations from target appear to be in response to perceived shocks to money demand, which have grown increasingly frequent and volatile with financial deepening and the subsequent instability in the velocity of money and money multiplier. Some central banks have also introduced policy rates to signal their policy stance and guide operations but again deviations happen frequently, especially given the friction between quantity targets and interest rate policy.

This flexible and somewhat opaque approach to monetary policy has several repercussions. The range of regulations and multiple interest rates that result from tensions in the system slow down financial deepening and therefore limit the effectiveness of policy. Also, the inconsistent application of reserve money targeting and the frequent lack of coordination with exchange rate interventions introduce significant noise to the policy signal, eroding the strength of the monetary transmission mechanism. This makes strategy and communications all the more important.

Strategy and communications: A forward-looking strategy and communication policy are both still largely missing from central banking practice in SSA. One likely reason is that the confusion surrounding the flexible RMT operational framework in place in many countries is preventing the authorities from settling on clear policy responses to macroeconomic changes, particularly supply shocks. This framework issue is often compounded by a shortage of analytical

and forecasting skills at many central banks, as evidenced by the fact that most SSA central banks do not have in-house macro models for forecasting. Communications are also rarely consistent or transparent, with few central banks releasing inflation forecasts or policy guidance.

How do SSA regimes measure up to international best practice

The discussion above suggests that central banks in SSA still have a significant way to go in modernising their operations to best achieve their objectives and that improvements are needed across all dimensions. International experience points to the fact that a strong legal mandate and de facto independence from political influence are key to reform. Once those are sufficiently secure, policymakers should initiate changes on multiple fronts – clear objective-setting, operational framework clarification, and forward-looking strategy and communications – as these changes are often mutually reinforcing.

The principles of effective monetary policy enumerated above provide a good blueprint for modernisation in SSA, but they need to be tailored to the regional context. Two critical issues stand out – optimal response to transitory supply shocks and coordination of monetary and exchange rate policy. On the former, Berg and Portillo (2018) point out that a forward-looking strategy and clear communications can effectively anchor inflation expectations in the face of transitory supply shocks. In contrast to developed countries, which typically use core inflation as a policy target, expected headline inflation may be more appropriate in SSA given the importance of food costs in income and the persistence of some of these shocks. In this context, the IGC paper by Adam et al. (2012), which continues to serve as the basis for inflation forecasting for the Bank of Tanzania, directly contributes to the ongoing process of modernisation in the region.

Coordinating monetary and exchange rate policy in SSA remains a complex issue. Historically, many SSA central banks have used exchange rates as nominal anchors, either de jure (in the case of pegs) or de facto, creating tensions with monetary policy. As SSA banks in countries with floating rates have modernised, they have tended to emphasise domestic price anchors, limiting foreign exchange policy to sterilised interventions. International experience suggests that an effectively coordinated exchange rate policy should only respond to significant deviations of rates from their equilibrium values, which in practice means managing large fluctuations in rates without targeting a specific level. However, given the uncertainty around the fundamental drivers of currency rate movements particularly in an environment with limited information flows and shallow capital markets, the optimal role for exchange rate policy will remain a work in progress for some time in SSA.

In conclusion, monetary policy in SSA has come a long way since its early post-independence days, when it served as a subsidiary financing tool for large state-dominated development plans. After around two decades of Reserve Money Targeting policy, central banks in the region are more independent, transparent and forward-looking. However, the increasingly volatile nature of domestic and international markets combined with renewed expectations on the stabilising potential of modern central banks puts pressure on the authorities to

continue reforming. Several countries have embarked on the path to adopting inflation targeting, following the lead of Ghana, South Africa and Uganda. In practice, this has meant a gradual process of transition that patches together elements from the old RMT model and the desired IT framework. From this perspective, Tanzania's ongoing path to inflation targeting is illustrative.

3. Overview of monetary policy in Tanzania

The trajectory of the Bank of Tanzania's monetary policy since independence has largely followed the trends on the rest of the continent, particularly among countries outside currency boards. Following a period of fiscal dominance and large-scale financial repression in the 1970s and 1980s, the following decade brought a remarkably "painless" disinflation through the implementation of the Reserve Money Programme. Over the last few years, the BoT has embarked on a gradual transition to a forward-looking policy rate framework. Following Adam et al. (2016b) and Kessy et al. (2017), this section summarises the historical development of monetary policy in Tanzania, focusing on the critical role of reserve money targeting and the ongoing transition towards a price anchor, including the challenges the BoT faces in implementation.

Evolution of monetary policy in Tanzania since independence

Following Tanzania's independence in 1961 and the government's formal adoption of the Ujaama, or African socialist, model for development in 1967, the Bank of Tanzania was rapidly subsumed as an instrument of the state-centred economic development policy. This was characterised by tight controls on the exchange rate, monetary-financed government spending, and closely managed credit rationing under which the vast majority of domestic loans were allocated to the public sector (over 95% in 1980-86). This state-dominated approach, while helping consolidate a peaceful society through nation-building, proved to be an economic failure, with per capita incomes falling by 30% between independence and 1989. This steady economic deterioration began to threaten the social gains secured under the Ujaama model by the middle of the 1980s, leading to a period of political and economic transition. By the early 1990s, Tanzania had adopted a number of key reforms to open up the economy, including the introduction of a floating exchange rate, the lifting of price controls, trade and market liberalisation, and privatisation of a number of state-owned firms (Adam et al., 2015).

The 1990s also heralded the beginning of a successful disinflation in Tanzania underpinned by a monetary-fiscal accord that put an end to the era of fiscal dominance. This crucial policy shift was supported by several factors: an explicit government recognition that deficit financing by the BoT was fuelling inflation,

an agreement with the IMF that imposed monthly cash budgets on ministries to enforce fiscal discipline, and legislation that increased the institutional independence of the BoT and explicitly identified price stability as its chief objective (Kessy et al., 2017). The results were a rapid disinflation with minimal effects on output in the late 1990s, as illustrated in Figure 2. This was buoyed by a favourable global economic environment, with a large increase in aggregate supply driven by China's growth contributing to non-inflationary expansion around the world. Meanwhile, several domestic facts of the time may explain this "costless disinflation," including relatively flexible prices in the agricultural and informal sectors on the demand side, disinflationary effects due to structural reforms on the supply side, and an overall expectations effect as the public adjusted its forward outlook in response to a credible policy shift (Kessy et al., 2017). That credibility was likely due to the coherence and suitability of the framework adopted by the BoT, the Reserve Money Programme.

Figure 2: GDP growth and inflation in Tanzania
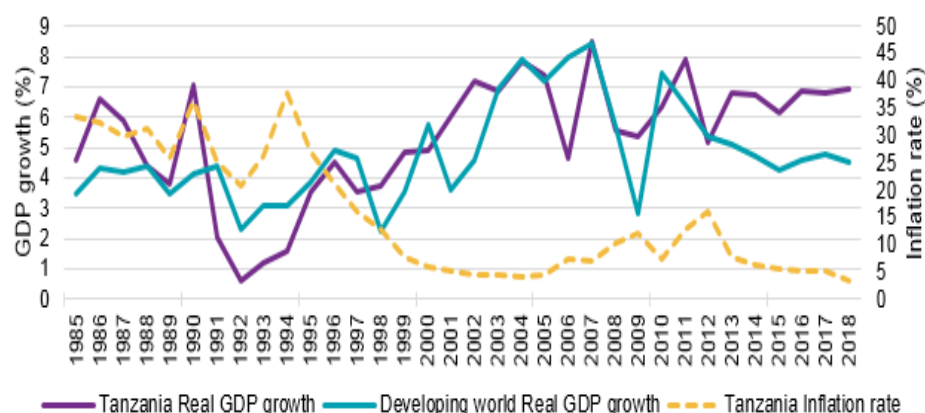
Source: IMF World Economic Outlook

Reserve Money Programme in Tanzania

The Reserve Money Programme (RMP) has been the operational framework of the BoT since the mid-1990s and the principal driver behind the extended period of monetary stability since then. At the time of adoption, a reserve money anchor was the obvious choice. A clear nominal anchor was needed to ensure price stability and exchange rates and interest rates were ruled out due to the commitment to a floating exchange rate and the thinness of financial markets, respectively. At the same time, targeting the BoT's balance sheet, the primary component being reserve money, was also the principle mechanism for enforcing budget discipline on the fiscal side. The stars were aligned in support of the RMP.

Like other reserve money programmes, the implementation of RMP is based on the basic logic of the quantity theory of money. The key relationships underpinning the programme are, thus: $M \cdot v = P \cdot y$, where M is the intermediate money target (broad money – M2 or M3), v is the velocity of this target, P is the Consumer Price Index (CPI), and y is real GDP; and the money supply identity $M = \mu \cdot H$ where μ is the money multiplier and H is reserve money, the BoT's immediate target. Combining these equations and expressing the variables in

terms of growth rates, where π is inflation (the growth rate of P) and g is the real GDP growth rate, gives the key operational framework equation for the RMP:

$$\pi + g \cong g(H) + [g(v) + g(\mu)]$$

To establish its reserve money growth target, $g(H)$, the BoT incorporates government targets for inflation and GDP growth and forecasts the trajectory of the velocity of money and the money multiplier (Kessy et al., 2017).

This is the simple theory behind the BoT's operational framework, which is a basic, rigid model for monetary policy. In practice, its implementation has been complicated by fluctuations in key economic variables, particularly money demand and its two relevant components, velocity and the money multiplier. In response to these shocks, the BoT has shown a degree of flexibility in its implementation of the RMP, deviating by up to 10-15% from its operational target for reserve money growth. Kessy et al. (2017) argue that this is most likely a reflection of an informal agreement worked out with the IMF to allow the BoT to react appropriately to economic news not available at the time of target-setting. The fact that core inflation, a proxy for expectations, was consistently below headline inflation since 2005, and the BoT often expanded reserve money significantly less than targets, strengthens this explanation.

Even with this level of flexibility, the RMP has several key limitations, much like other quantity target frameworks still popular across SSA (see discussion in first section). Firstly, the RMP is vulnerable to destabilising shocks in money demand – the velocity and multiplier. With money supply held fixed, fluctuations in money demand translate into large swings in short-term interest rates. Secondly, and on a related note, this fluctuation hampers the development of the financial sector and may further dampen the already limited transmission mechanism of monetary policy. Interest rate volatility can cause banks to hold large excess reserves, as has been the case in Tanzania, which can weaken transmission (Saxegaard, 2006). Rate volatility can also weaken the link between short-term rates, directly influenced by the central bank, and long-term rates which are more directly relevant for aggregate demand (Woodford, 2003). In this sense, the RMP limits the emergence of a more conventional transmission mechanism and thus makes it harder to transition to a modern monetary framework. Finally, the framework suffers from a lack of transparency, an important criterion for policy effectiveness given the central role of expectations anchoring in the price-setting process. RMP's lack of transparency stems not only from the fact that its targets (monetary aggregates) are harder to grasp than inflation and interest rates but also because its flexible implementation has sent mixed signals to markets. Taken together, these limitations have led the BoT to start modernising its operational framework.

Policy rates and the path to modernisation

As discussed in the first section, a move towards inflation targeting is the logical next major step for central banks in SSA looking to modernise their operational frameworks. The theoretical support for this model is bolstered by the recent successes of countries adopting this framework, especially Uganda, one of Tanzania's neighbours. As illustrated in the figure below, since adopting an interest-rate based system, short-term interest rates have declined substantially

and converged closely around the policy rate, with occasional exceptions. Furthermore, Berg et al. (2013) find evidence that Uganda's monetary policy had the strongest transmission effect in the EAC, likely due to the clear and transparent signalling of the policy rate system. Thus a transition to policy rates has the potential to address the major limitations of the BoT's current operational framework.

Figure 3: Bank of Uganda policy rates, 2011-2015
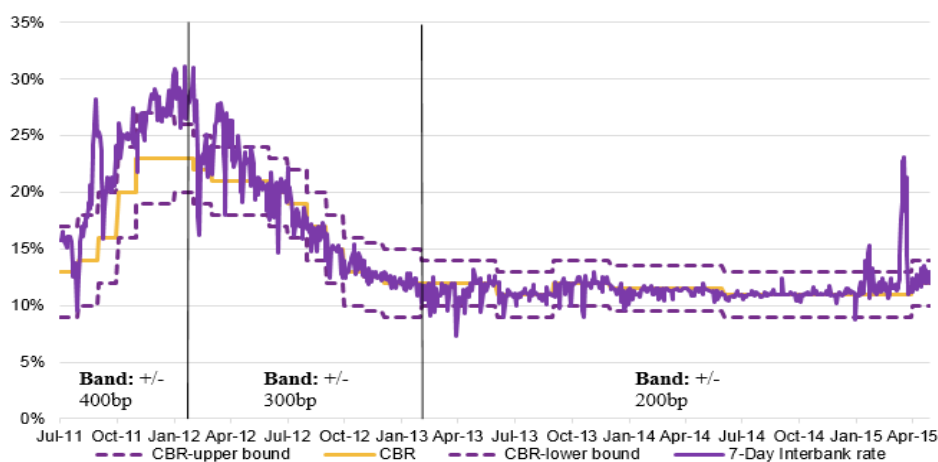
Source: Adam et al. (2015) from Bank of Uganda data

Moving to policy rates typically requires taking two major steps – communicating the new short-term interest rate target and pursuing it through a combination of monetary policy instruments, primarily open-market operations (OMOs) and standing facilities. As argued in Adam et al. (2015), the most relevant interest rate target for Tanzania is probably the overnight interbank rate, which sees the highest volume of transactions. This rate, which reflects the amount of liquidity in the market, is influenced primarily through OMOs, the purchase and sale of government securities (Treasury bills). However, OMOs alone are often unable to guide interest rates to a stable band around their target due to short-term fluctuations in money demand. Standing facilities, which allow banks to borrow (or lend) liquidity at a fixed premium (or discount) against the policy rate, help create a corridor around the policy rate if it is sufficiently anchored by OMOs. By introducing standing facilities, a central bank relinquishes direct control of money reserves to better target interest rates. This, therefore, represents an essential step of any move from reserve targeting to policy rates.

Currently, the BoT is on an extended transition to policy rates – and formal inflation targeting by financial year 2020/21 – like many of its SSA peers. As early as December 2009, the BoT introduced a new policy rate incorporating interest rates, and from November 2013 introduced a discount rate set at a premium on this policy rate. However, full-blown standby facilities have yet to be introduced, even though the discount rate provides banks with access to 91-day Treasury Bills on demand (Adam et al., 2015). Meanwhile, the BoT's official short-term monetary policy target remains reserve money growth and the intermediate target continues to be growth in the broad money supply (BoT MPS, 2019). The transition to inflation targeting remains a work in progress.

4. IGC contributions on monetary policy in Tanzania

The IGC has worked closely with the BoT on monetary and exchange rate policy issues since its establishment in 2008. Led by Professor Christopher Adam and Dr Pantaleo Kessy, and with support from the BoT's leadership led by former Governor Benno Ndulu, this stream of work has helped shape the Bank's policy modernisation and informed policy debates in the wider region through the East African Community (EAC). This section summarises the IGC's body of work in this area[1], discussing the key findings and recommendations from each paper within the three major themes covered – the effectiveness of Tanzania monetary policy, the transition to inflation targeting, and exchange rate policy.

Effectiveness of reserve money targeting: The monetary transmission mechanism

As discussed in the first section, one of the fundamental debates on monetary policy in SSA concerns its effectiveness in controlling inflation and stabilising output via the transmission mechanism. In this broader context, an IGC paper by Montiel et al. (2012) seeks to understand the efficacy of the transmission mechanism to aggregate demand in Tanzania, with a view to developing a framework for analysis across the EAC.

To estimate the effectiveness of the monetary transmission mechanism, Montiel et al. (2012) use a Vector Auto regression (VAR) method much like other studies in developing country contexts where data issues limit the feasibility of structural modelling. They estimate a three-variable VAR that includes an aggregate demand indicator (a core component of Tanzania CPI), a monetary policy variable (base money), and an information variable explaining changes in base money (exchange rate). They also expand the model to include three more variables – broad money, real GDP, and bank lending rates to account for possible misidentification in the more restricted model. Impulse response functions are used to isolate the various channels of monetary transmission

The paper finds a very weak monetary transmission mechanism in Tanzania, with monetary policy having economically insignificant price level effects and virtually no real output effects under all specifications used. The authors

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[1] This section only covers the projects directly funded by the IGC. However, the IGC Tanzania team and associated researchers have written a number of other significant papers on monetary policy in Tanzania, such as the overview papers by Adam et al. (2015) and Kessy et al. (2017) referenced above.

argue that this is likely due to the fact that changes in bank liquidity triggered by monetary policy do not translate into changes in bank behaviour, possibly because banks interpret these as temporary shocks and absorb them through excess reserves. Another structural issue in Tanzania that may explain the weakness of monetary transmission is the still undeveloped and uncompetitive nature of the financial system. The financial sector is still small, with only 16% of the population having access to the formal sector in 2010, and the banking system exhibits low competition and market development, with a small interbank market in place. This suggests that banks face lower costs for holding lending rates constant and may struggle to distinguish between temporary and permanent shocks to rates, both of which would dampen the strength of the transmission mechanism (Cottarelli and Kourelis, 1994).

These results should, however, be taken with a grain of salt. The ability of structural VAR estimation methods to identify the strength of the transmission mechanism in low-income countries (LIC) has been called into question. For example, and as recalled above, Li et al. (2016) find that LIC-specific factors such as short data samples, measurement error, and frequent supply shocks weaken the precision of estimation substantially enough to often yield insignificant results even where transmission mechanisms are robust. Nevertheless, the findings of Montiel et al. (2012) are important in at least one respect – they point to the importance of financial deepening for strengthening monetary policy. This then links back to the discussion on policy modernisation at the BoT and the role of a policy system in stimulating the domestic banking sector.

Effectiveness of reserve money targeting: Money demand in Tanzania

Given the BoT's reliance on a money supply targeting framework (the RMP), understanding the dynamics of money demand is critical to conducting effective monetary policy. As discussed above, the BoT uses forecasts for the velocity of money and money multiplier when setting its reserve money targets. It is in this context that the IGC paper by Adam et al. (2011) sets out to develop a model for money demand in Tanzania to understand its structural determinants and improve the BoT's forecasting ability.

Adam et al. (2011) start with the conventional demand for money function, where the demand for broad money (M2) depends on income, interest rates, returns on alternative assets (such as foreign currency holdings and offshore assets), expected inflation, and expected depreciation. The authors then use unstructured VAR modelling to estimate the short- and long-run coefficients of these variables for M2 demand as well as its two subcomponents, currency and deposits demand. Noting the importance of structural change in Tanzania and its likely effect of increasing the money intensity of GDP, the authors add proxies for these dynamics in their models. They also develop a forecasting model for the velocity of money based on the drivers of money demand to inform the BoT's policy framework.

The authors find drivers of money demand in line with theoretical predictions and the wider literature. Their estimation results point to transactions intensity of GDP (a structural change proxy), expenditure and income as having significant

positive effects. Expected inflation and depreciation depress money demand, as anticipated, but interest rate effects are insignificant. These effects hold over both the short and long run, though real GDP has a stronger effect over a longer time horizon. At the component level, long-run currency demand responds sharply to inflation expectations but not interest rates or depreciation, while deposits demand responds to expected depreciation. In the short run, both components exhibit a strong inflation effect and a weak interest rate effect, in line with overall money demand. The authors then show how these results can be incorporated into a VAR forecasting model for the velocity of money. They demonstrate that a suitably specified VAR model outperforms any univariate alternative in terms of both in and out-of-sample forecasting.

These findings helped strengthen the BoT's operational framework in two ways at the time of release. First, by systematically identifying the trends behind money demand, including the declining velocity of money during the late 1990s, they confirmed a stable, well-behaved dynamic that could guide reserve money targeting. Second and more concretely, the improved velocity forecasting model helped improve the precision of reserve money targets. The forecasting suggestions from the paper were incorporated into BoT modelling by the National Financial Programming Working Group. Now, nearly a decade after the paper's release, the findings are worth revisiting to understand whether money demand continues to be as stable as at the time of publication. If not, this would bolster the case for accelerating the BoT's transition to inflation targeting, given that framework's advantage in responding to money demand volatility.

## Effectiveness of reserve money targeting: Money multiplier in Tanzania

Together with the velocity of money discussed above, the money multiplier plays a key role in determining money market equilibrium. In a reserve targeting framework such as those used across the EAC as of 2010[2], the money multiplier is the key transmission mechanism through which monetary policy's operational target, reserve money, affects its intermediate target, the broad money supply. An IGC paper by Adam and Kessy (2011) examines the evolution of the money multiplier in Tanzania and develops a framework for alternative forecasting models for the multiplier, all of which is laid out as a template for broader use across the EAC region.

Adam and Kessy (2011) decompose the M2 money multiplier into its three main components – the cash ratio, required reserves, and excess reserves. As illustrated in the figure below (updated to include available data since 2011), they find that the M2 multiplier is stable over the long run, with broad money growing in line with reserve money over the decade from 2000 until around 2015. This confirms the notion that the BoT's RMP has helped stabilise prices. However, the authors note that the stability of the multiplier is probably due in part to coincidence, with the fall in the statutory cash ratio being cancelled out by an increase in excess (i.e., voluntary) cash ratio, a trend which is unlikely to continue. Indeed, BoT data suggests that the M2 multiplier has increased significantly since around 2015, from an average of 2.2 in 2010 to 2.7 in 2018, likely driven

[2] And still in use today in all EAC countries except Uganda, which has adopted "inflation targeting lite," as discussed above.

by a continued decline in both the cash ratio and excess reserves as a result of financial deepening.

Figure 4: Base money, M2, and the money multiplier in Tanzania
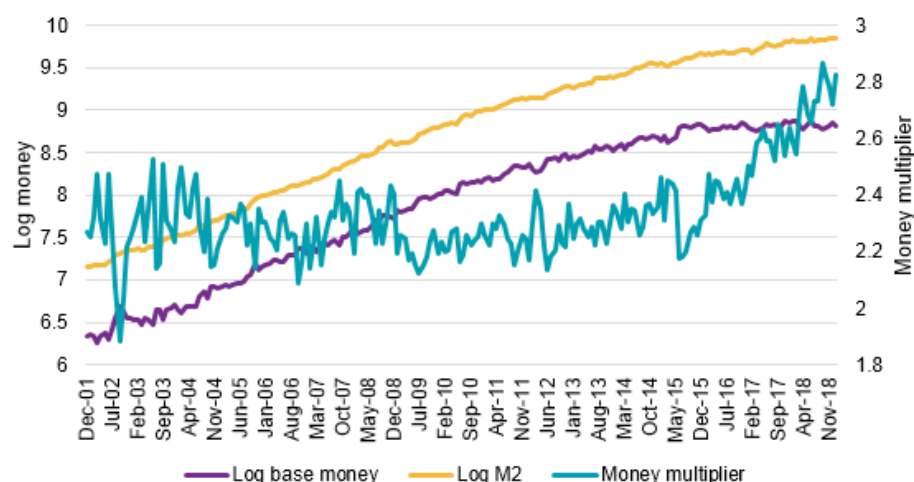
Source: Bank of Tanzania

Another notable dynamic that is clearly visible in the figure above is the volatility of the money multiplier in the short run. The multiplier tends to fall then bounce back in response to increases in reserve money, with the pass-through usually taking around 24 months. Its components, the cash ratio and excess reserves are highly seasonal due to the central role of agricultural-driven liquidity needs and the conditions of IMF lending (which were loosened in 2007, attenuating the seasonality). Finally, the authors find that standard forecasting models can be fairly successful in predicting the multiplier, citing a specification of an ARIMA model as an optimal example.

The findings of Adam and Kessy (2011) have several important implications for BoT policy. First, the results on short-term movements in the multiplier are consistent with Montiel et al. (2012) results on weak monetary transmission, suggesting that banks often respond to monetary policy changes by holding onto liquidity (reserves) in the short term, thus decreasing the multiplier and attenuating the real effects of the policy shift. Second, the short-term volatility in the multiplier confirms the challenge posed to the BoT's operational framework by shocks to money demand. The paper's forecasting recommendations – which were incorporated into BoT forecasting models by the Financial Programming group – provide an interim "fix" for improving reserve targeting while the BoT transitions to a policy rate system that can better absorb shocks to money demand. Finally, the paper is prescient in predicting a long-term growth in the money multiplier, which must be baked into BoT long-term forecasting.

Effectiveness of reserve money targeting: dollarisation in Tanzania

Dollarisation – holding US dollars instead of local currency as a store of value, medium of exchange, or unit of account – can weaken the effectiveness of monetary policy and pose risks to the liquidity and solvency of the financial sector if sufficiently widespread. This was a growing issue in Tanzania in the

2000s, when – between 2001 and 2012 – Tanzania had one of the ten highest dollarisation rates in sub-Saharan Africa, in terms of both loans and deposits (Mecagni et al., 2015). The Government of Tanzania became worried about this trend, and in this context, an IGC papery by Kessy (2011) analyses the drivers of dollarisation and proposes policy measures for stemming its increase.

Figure 5: Base money, M2, and the money multiplier in Tanzania


Source: Bank of Tanzania

Kessy (2011) analyses trends in both financial and transaction dollarisation, noting that the former is high but declining while the latter is increasing significantly. The paper finds that the primary determinants are expected return on foreign currency deposits, availability of foreign currency, and exchange rate volatility, but not inflation. It recommends banking sector regulation including limitations on forex denominated loans to certain sectors, higher reserve requirements for forex loans, and increased restrictions on foreign currency denominated transactions versus those in Tanzanian shillings.

The IGC paper is the first major study of dollarisation and its determinants in Tanzania. Its implications for financial regulation are significant and remain relevant. Since its release, there have been ongoing discussions on the topic, culminating in Ministry of Finance directives banning transaction dollarisation from January 1st 2018 and indicating that it would issue a law to the same effect in due course.

Moving towards inflation targeting: Food prices and inflation dynamics

Accurate inflation forecasting is essential for any monetary policy framework and requires a good understanding of the key drivers of price fluctuations in the economy. Tanzania saw a large spike in inflation in the late 2000s which tested the BoT's capabilities for the first time in over a decade given the stable inflation and growth in Tanzania since the adoption of the RMP framework (see figure below). In this context, the IGC paper by Adam et al. (2012) sets out to identify and model the key determinants of inflation in Tanzania in order to improve the BoT's forecasting capabilities and isolate the components of inflation amenable to monetary policy.

Figure 6: Headline inflation vs target in Tanzania

Source: Target established in Monetary Policy Statement in July for subsequent 12 months
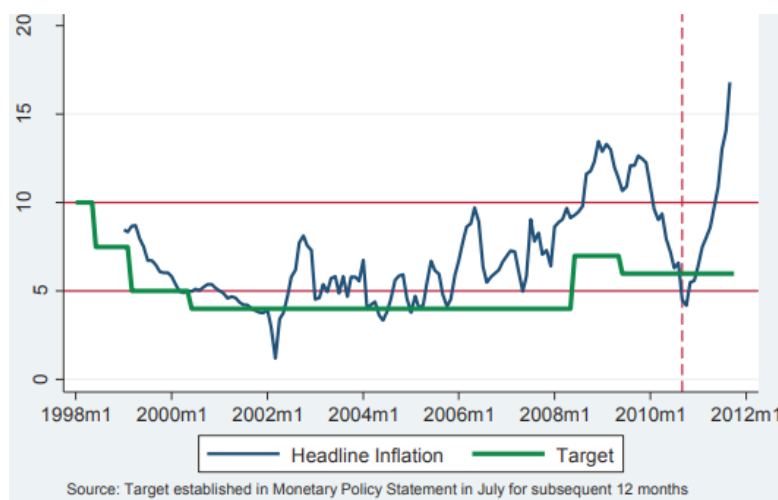
Source: Adam et al. (2012)

Adam et al. (2012) use a simple open economy model to decompose overall (headline) inflation into three major components: food price inflation, energy inflation, and core inflation, which is the residual. The authors then use a two-stage, single-equation strategy to estimate the relative weights of each of these components on headline inflation over time. They find that food and fuel inflation is around 60% of headline inflation and are primarily driven by supply-side factors such as yield fluctuations and international price changes. Meanwhile, core inflation – the remaining 40% of headline – is primarily determined by demand-side factors which can, in theory, be influenced by monetary policy.

Figure 7: Inflation by subcomponent in Tanzania

Source: NBS. Revised CPI from 2010m9
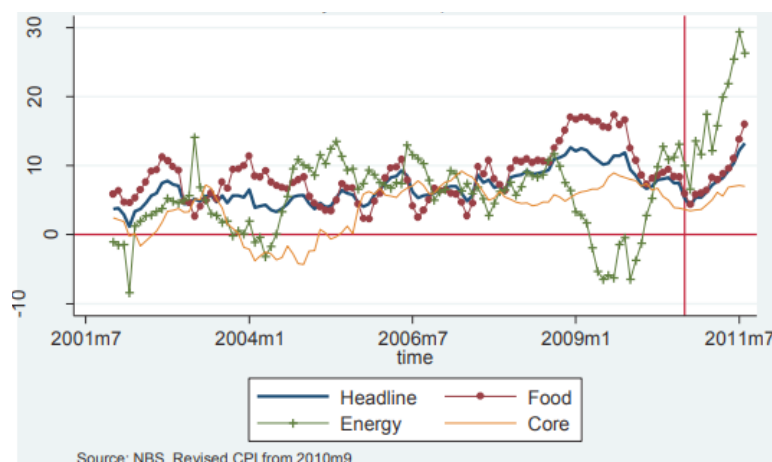
Source: Adam et al. (2012)

Looking at the subcomponents, in turn, Adam et al. (2012) find that food price inflation is primarily influenced by supply factors such as domestic agricultural shocks, which are largely seasonal, and pass-through from world food and energy prices. Inflation pass-through is, however, relatively weak, and tends to be asymmetric (stronger when prices rise) and stronger near border posts. Energy price inflation, which is only around 6% of headline, appears to be driven mainly by world energy price movements but is otherwise poorly explained. Finally,

core inflation appears to be influenced mainly by demand factors such as money supply growth. Bringing these together, headline inflation is highly seasonal, with prices appearing to be largely flexible – shocks dissipate after a few months.

The findings of this paper have been very significant for BoT policy for two reasons. First, by decomposing inflation movements into their major components and isolating the opportunity of policy for tackling core inflation, the paper provides guidance to policymakers on where to focus their efforts. Second, and at least as importantly, the approach used in the paper provides a model for improving inflation forecasting at the BoT. Indeed, the paper was presented to the Bank's Monetary Policy Committee twice and its approach still forms the basis of its inflation forecasting model. Under the auspices of the African Development Bank, the paper also contributed to the regional discussion on how Sub-Saharan African countries should respond to the food price shocks that were prevalent around 2011, and led to the paper being published as Adam et al. (2016a).

Exchange rate policy

As discussed previously, exchange rate policy is an important – and often competing – priority of central banks in SSA. Coordination with monetary policy is critical, particularly in the context of external shocks and income flows. As with many countries around the world, Tanzania is committed to a flexible exchange rate regime, at least in the medium term, meaning that policymakers do not target a specific rate. However, in the short-run, the BoT is mandated to intervene in the foreign exchange market to pursue a number of objectives, including prevention of rate volatility that can be damaging to the domestic economy. Ghosh et al. (2016) show that such foreign exchange interventions can be welfare-improving in emerging market economies.

In 2015-16, the currencies of East African Community countries witnessed sharp depreciations, leading the authorities in the region to intervene in the foreign exchange market. In this context, an IGC paper by Adam and Iyer (2017) sets out to examine the effectiveness of capital market restrictions imposed by the BoT at various points since 2010.

The paper takes two complementary approaches to assessing the BoT's capital market restrictions on the nominal exchange rate. The first is to use structural VARs to estimate the "offset" coefficient – the extent to which economic actors can rebalance their portfolios in response to changes in prices and thus blunt the effectiveness of monetary policy and introduce a role for capital market restrictions. The second is an event study approach which looks at exchange rate movements following capital control measures and estimates their deviation from counterfactual values in the absence of controls.

The authors find that capital market restrictions designed to put "sand in the wheels" of exchange rate movements were initially effective in 2011, but much less so the following times they were used, in 2012 and 2015. This was likely due to anticipation and circumvention by firms, as happened during capital control interventions in Brazil, Columbia and Thailand, perhaps by using business relationships across the EAC to avoid restrictions on asset acquisition. The findings suggest a role for coordination within the EAC to regulate capital flows within the region if capital controls are to be an effective component of the BoT's policy arsenal in the future.

5. Conclusions and future areas of research

Much like many of its peers across the continent, the BoT has used reserve money targeting with excellent results over the last two decades. However, as economic conditions have changed and global thinking about monetary frameworks has evolved, the BoT has entered into a period of transition and modernisation of its monetary policy. In Tanzania, this process relates to both national policy and regional monetary integration within the EAC. These two interrelated strands of work come with a number of challenges and opportunities, including areas for future research.

Tanzanian monetary policy in transition

The BOT has embarked on a gradual transition towards inflation targeting, which it is planning to formally adopt in the 2020/21 financial year. As the target date approaches, the BoT is confronted with several interrelated issues that will shape its approach.

The first is the question of the implementation of effective policy rates as a precursor to full inflation targeting. As discussed earlier, a working policy rate system requires the complementary use of structural OMO and standing facilities in a way that guides interest rates to a level consistent with the bank's inflation objective and encourages financial sector development (by keeping the bulk of liquidity transactions within OMO). Adam et al. (2016b) points to three important operational components to achieve this: setting the level of structural OMO so that the policy rate is consistent with inflation objectives (i.e., banks are not frequently using standing facilities), starting with a wide band around the policy rate for standing facilities and gradually narrowing it as the bank earns about the evolution of market expectations, and moving towards bank reserve averaging to reduce volatility of interest rates. These will all be important steps for the BoT in the months ahead.

Another important consideration during transition is the independence of the BoT, which will be crucial to ensure the Bank can "see through" the implementation of a new regime. As noted by Adam et al. (2016b), moving to inflation targeting visibly shifts accountability for interest rate movements to the central bank. Although

interest rates are likely to be lower on average, the BoT will no longer be able to use the IMF-supported money targeting framework as a "smokescreen" for its policy actions. With the cost of monetary policy actions also increasing, a shift to IT will likely lead to increased pressure from both government and the private sector. In particular, a lack of fiscal discipline would pose a significant risk to the BoT's independence by forcing it to raise interest rates to avoid inflationary financing of the deficit. A renewed commitment to the BoT's institutional independence, particularly during election periods, and a political consensus that the government is solely responsible for budget discipline, are needed to ensure that the Bank retains all instruments at its disposal.

Regionally, EAC member countries are moving towards monetary convergence as part of the East African Monetary Union, due to be launched in 2024. The union's monetary framework will likely reflect the arrangements in its largest economies and therefore be a form of inflation targeting, thus strengthening the case for a timely transition in Tanzania. Meanwhile, harmonised reserve requirements and the opening up of capital accounts (regionally so far, and with the rest of the world over time) further limits the policy options under money targeting and bolsters the case for IT.

Future areas of research

Looking ahead, several areas of research may prove useful as the BoT navigates its transition to inflation targeting, both in terms of national and regional policy. On the national side, the BoT is working closely with the IMF on monetary policy forecasting and modelling. To complement this, an analysis of the foreign exchange market and the structural determinants of exchange rates could be insightful. Building on the Adam and Iyer (2017) paper, a new study could examine bank-level data that includes the multiple exchange rate shocks over the last years, which would increase the chance of identifying the key drivers of exchange rate movements. As well as being of interest in its own right, this work would help inform on-going forecasting and policy work in Tanzania and would connect well with ongoing discussions on exchange rate policy in other countries in the region (such as Ethiopia).

On the regional side, much progress has been made on coordinating monetary policy in preparation for integration, as crystallised in the 2013 East African Monetary Union Protocol. An area for further research would be an assessment of real exchange rate misalignments within the EAC, as these will need to be addressed before the adoption of a single currency. More broadly, monetary union also requires concerted efforts to coordinate fiscal policy, set up a banking union, and pool political sovereignty. Much work remains to be done on these essential topics.

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