

 **NORGES BANK**

Central Bank Modernization

The Technical Cooperation Program between the Reserve Bank of Malawi,
the International Monetary Fund and Norges Bank, 2006-2009

Wilson T. Banda, Jon A. Solheim and Mary G. Zephirin (eds.)

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May 2010**

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Preface

Wilson T. Banda, Jon A. Solheim, Mary G. Zephirin

The broad-based technical cooperation program between the Reserve Bank of Malawi (RBM), the International Monetary Fund (IMF) and Norges Bank¹, which has supported the Malawian authorities' efforts to strengthen and modernize the RBM since 2006, has some unique features that have led us to regard it as a pilot program. We therefore considered it worthwhile to issue an Occasional Paper covering the objectives, framework and subject areas of the program. This Occasional Paper will cover the program's implementation up to end-2009. While the articles provide guidance on the background against which choices and recommendations were advocated, the achievements of the program are not fully articulated given the ongoing nature of the technical cooperation program.

We hope that the articles will provide helpful information and guidance for other central banks and institutions aiming to modernize and professionalize their policy conduct. A significant feature of the program has been its implementation by the combination of an experienced resident advisor and a number of short-term project visits from professional experts. The experts, largely employees of Norges Bank, also provided follow-up advice after the project visits. This arrangement, in combination with study tours to Norges Bank, has facilitated more thorough cooperation than would otherwise have proved feasible.

Other important features of the RBM/IMF/NB program have been the medium-term perspective it adopted from the outset, and the importance that the Norwegian authorities attached to flexibility in its implementation. Following two renewals, the program will cover the 5-year period, October 2006-December 2011, and its content has been adapted to issues identified during implementation. The program has been administered by, and is under the supervision and quality control of, the IMF's Monetary and Capital Markets Department (MCM). Mary G. Zephirin² has been the IMF's backstopper. In addition to following up program implementation, she has coordinated the IMF's referee reviews of the project reports, and provided the IMF's project management components. Wilson T. Banda³ has monitored and coordinated the RBM's program implementation and been the resident advisor's main contact person. Jon A. Solheim⁴ served as resident advisor from end-January 2007 to end-October 2009. He also participated in the discussions between the RBM, MCM/IMF, the Norwegian development authorities and Norges Bank in connection with the preparation and formulation of the technical cooperation agreement in the first half of 2006 and in the three projects conducted in the 4th quarter of 2006.

¹ Central Bank of Norway

² Mary G. Zephirin is Deputy Division Chief in the Africa Regional Division of the Monetary and Capital Markets Department of the IMF.

³ Wilson T. Banda is General Manager at the RBM. The functional areas of Economic Services and of Supervision are reporting to the General Manager.

⁴ Jon A. Solheim has held various senior positions in Norges Bank, and served as Alternate Executive Director on the Board of the IMF (Nov. 1991-Dec. 1993) prior to his position as Executive Director of Norges Bank Financial Stability (1994-2003) and as Executive Director on the Board of the IMF (Dec. 2003-Jan. 2006).

In late October 2009, he was succeeded by Asbjørn Fidjestøl, who will serve as resident advisor to end-2011.

The project articles in Chapters III-XII are written by the short-term experts and the RBM staff in cooperation with Jon A. Solheim. The authors are indebted to numerous RBM staff, the IMF referees and Asbjørn Fidjestøl for helpful comments on the articles. We also thank Norges Bank for providing technical editorial assistance and for the financing of the Occasional Paper. Furthermore, we would like to thank the Norwegian development authorities and the Norwegian Embassy in Malawi for the financial support that made the program possible.

The Editorial Committee comprising Wilson T. Banda, Jon A. Solheim and Mary G. Zephirin has reviewed the articles. However, the views and opinions expressed in the chapters are those of the authors alone.

Foreword

Deputy Governor Jan F. Qvigstad, Norges Bank

Over the years, Norges Bank has provided various types of assistance to central banks in developing countries and emerging markets. Because Norges Bank is situated in a country with long traditions and considerable ambitions with respect to development assistance, it has been natural for the Bank to provide such assistance, not least because smoothly functioning institutions and sound policy formulation and implementation are so important for growth and development. However, it has not always been easy to assess properly the effectiveness of our contribution to institution-building and central banking. Furthermore, Norges Bank's assistance has been spread among many different recipients, making follow-up and evaluation difficult.

In the second half of 2005, at the initiative of Governor Svein Gjedrem, Deputy Governor Jarle Berge⁵ was charged with undertaking an evaluation of Norges Bank's technical cooperation with central banks in developing countries. With the aim of enhancing the efficiency and effectiveness of technical cooperation and capacity building in developing countries, Deputy Governor Berge recommended that Norges Bank should concentrate its assistance geographically with the aim of providing broad-based assistance in a medium-term perspective. In light of senior management's subsequent review discussions, it was concluded that Norges Bank's future technical cooperation program should concentrate on one or a few partner central banks and cover a wide range of activities which would be designed around a long-term resident expert and supplemented by short-term expert visits. This would make it easier to assess whether the return on the assistance was commensurate with the resources invested. Such an approach would also ensure that the delivery was attuned to the recipient bank's needs and capacity for receiving assistance, and would result in greater continuity and motivation for the persons providing the assistance.

It was imperative for us to choose a technical cooperation partner in consultation with the International Monetary Fund (IMF) and the Norwegian development authorities, which have provided the financial resources. In view of the IMF's broad knowledge of the needs and prerequisites for central banking assistance, we wanted the program execution to be under the supervision and quality control of the IMF and the program implementation to be in collaboration with Norges Bank, employing Norges Bank expertise as much as possible.

Malawi is one of Norway's main development partners, and both the IMF and the Norwegian development authorities recommended the Reserve Bank of Malawi (RBM) as technical cooperation partner. In agreement with the RBM and the IMF, and as outlined in Chapter I, a comprehensive cooperation program has been drawn up. It has been designed around a long-

⁵ Jarle Berge was Executive Director on the Board of the IMF in the period 1994-95, and served as Deputy Governor of Norges Bank in the period 1996 – 2008. He has been Alternate Executive Director on the Board of the IMF since April 2008.

term resident expert and supplemented by short-term expert visits. Jon A. Solheim, who had extensive experience from Norges Bank as well as the IMF, served as “Monetary and Central Bank Operations Advisor” to the RBM from end-January 2007 to end-October 2009, when he was succeeded by Asbjørn Fidjestøl⁶.

In Chapter XIII, the IMF’s evaluation of the technical assistance provided to the RBM is presented. In general, Norges Bank’s technical cooperation with the RBM is assessed as performance-oriented and successful. This is attributed to the positive institutional collaboration established between the two central banks. The combination of a permanent advisor located at the RBM and short-term advisors who mainly have come from the same central bank is emphasized as an important factor for success.

The broad-based and comprehensive technical cooperation program has covered a number of areas of relevance not only for the modernization of the RBM, but also for other central banks in developing countries and emerging markets. In fact, the technical cooperation program with the RBM was designated a pilot case to implement such an approach. Since a paper presenting the main findings and lessons of the various projects and the main effects of this form of technical cooperation could prove useful for a wider audience, we have decided to issue an Occasional Paper in cooperation with the RBM and the IMF. With this publication, we hope to fill a gap.

⁶ Asbjørn Fidjestøl served as Deputy Executive Director of Norges Bank Financial Stability before joining the Nordic-Baltic Executive Director’s Office as a Senior Advisor during 2000-2002. After returning to Norges Bank he has worked in Norges Bank Monetary Policy as Director of the Department for Market Operations and Analysis during 2003-2006 and as Director in a staff position.

Foreword

Governor Perks Ligoya, the Reserve Bank of Malawi

Malawi, as a member state of the International Monetary Fund (IMF), has had technical assistance in several different areas. Part of the IMF's technical assistance has been channeled to the Reserve Bank of Malawi (RBM). The technical assistance has tended to target specific areas, through short-term expert visits.

In 2005, the RBM's need for technical assistance coincided with a decision by Norges Bank to concentrate its technical assistance on one or a few central banks for a broad coverage of activities. Such concentration of technical assistance should make it easier to evaluate the total impact of technical assistance from Norges Bank. This led to identification of the RBM as a cooperating central bank, with the IMF as cooperating partner on the basis of their vast experience in consulting with member central banks.

In 2006, a technical cooperation program was therefore agreed between the RBM, the IMF and Norges Bank, encompassing a broad-based central bank modernization program for the RBM. The execution of the technical cooperation program was under the supervision and quality control of the IMF through the Monetary and Capital Markets Department (MCM), and financed by resources provided by the Norwegian authorities. Unlike the previous technical assistances with the IMF, the approach involved a long-term resident expert, supplemented by short-term expert visits, most of them by experts from Norges Bank.

The first phase of the project covered central bank accounting, risk management and strategic planning/review processes, currency management, payments systems, liquidity forecasting and monetary operations. Also covered were macroeconomic analysis and the monetary policy process, and foreign exchange policy.

In October 2007, with the recognition that substantial progress had been achieved under the project, but that further assistance was needed to achieve the medium-term objectives, a second phase of the project was negotiated, to run through 2009. It enhanced grounding for the first phase, and extended to foreign exchange management/investment, financial stability, organizational structure, and governance arrangements necessary for institution-building of the RBM.

In light of the successful implementation of the two phases, the project was extended by another two years to end of 2011. During this period, the positive outcome will be strengthened, with a more in-depth focus on issues related to monetary/ foreign exchange operations, macroeconomic analysis/modeling, accounting/automation and payment systems.

The project has remained flexible, responding to developments and requirements identified in the course of implementation, in consultation between the RBM, Norges Bank and the MCM.

This foreword to the Occasional Paper is an indication of what has been achieved so far, and what is to be done next, for a more comprehensive outcome of the technical cooperation program.

Chapter I

Overview of the Technical Cooperation Program between the Reserve Bank of Malawi, the International Monetary Fund and Norges Bank, 2006-2009

Jon A. Solheim⁷

I. Background

As stated in the Foreword by Deputy Governor Jan F. Qvigstad, Norges Bank (the Central Bank of Norway) has for many years been providing various types of assistance to central banks in developing countries and emerging markets. This has frequently taken the form of giving specialists from Norges Bank leave of absence to carry out missions of varying durations sponsored by an international organization (the International Monetary Fund, the World Bank, etc.) or a national aid organization. On occasion, technical assistance has also been provided under an agreement made directly with another central bank, usually in the form of training in Norges Bank. Such activities have often been the result of initiatives taken by others. Although these various activities have been useful to the recipient, it has been an open question whether the ways in which the assistance has been delivered could be made more effective and result-oriented.

In the second half of 2005, it was concluded that in the coming years Norges Bank should mainly concentrate its assistance on one developing country, or on a small number of developing countries. Norges Bank stated that it was prepared to allocate about 2 man-years annually for a period of 3-5 years for technical assistance, comprised of about 1 man-year for a long-term expert and about 1 man-year for short-term expert projects. With Norges Bank providing a substantial part of the technical assistance to a central bank, it would be easier to assess whether the return on the assistance was commensurate with the resources invested. Such an approach would also permit more long-term, holistic planning of how the assistance should be organized, and ensure that resources could be made available with the least negative impact on Norges Bank's own activities.

Technical assistance to a central bank in a developing country cannot be regarded as a core activity of a central bank. Although Norges Bank would be prepared to cover some costs, the major part of the costs associated with the assistance should be financed outside its own budget. Over the years, the Norwegian development authorities have placed substantial emphasis on institution building. The authorities therefore agreed to integrating and financing Norges Bank's technical cooperation with a central bank in a developing country as an element of Norway's

⁷ Jon A. Solheim was MCM/IMF Resident Advisor (Monetary and Central Bank Operations Advisor) to the Reserve Bank of Malawi in the period January 2007-October 2009. He has held various senior positions in Norges Bank, and served as Alternate Executive Director on the Board of the IMF (Nov. 1991- Dec. 1993) prior to his position as Executive Director of Norges Bank Financial Stability (1994-2003) and as Executive Director on the Board of the IMF (Dec. 2004-Jan. 2006).

overall development assistance. Since Norges Bank's technical assistance would be part of Norway's overall assistance to the country in question, it was natural to search among Norway's main partner countries when selecting a central bank.

The International Monetary Fund (IMF) has broad knowledge of the needs for technical assistance and the absorption capacity of the central banks in question. Accordingly, Norges Bank considered it essential that the assistance program was carefully coordinated with any assistance provided by the IMF itself to the central bank in question. In October 2005, Norges Bank requested that the IMF and the Norwegian development authorities identify a central bank in a developing country that would be interested in, and could benefit from, receiving technical assistance from them on a longer-term basis. Malawi is one of Norway's main development partners, and both the IMF and the Norwegian development assistance authorities recommended that the Reserve Bank of Malawi (RBM) might be a possible technical cooperation partner for Norges Bank.

The absorption of the IMF's previous technical assistance to the RBM had been somewhat mixed. The IMF was therefore open to modifying the program with the RBM. After being approached by the IMF's December 2005 technical assistance mission to the RBM, the RBM expressed interest in technical cooperation with Norges Bank. At the beginning of February 2006, representatives of the IMF and Norges Bank visited the RBM, and the discussions showed that the RBM would appreciate receiving technical assistance from Norges Bank in a wide range of areas.

The preferences of the RBM were broadly in line with the recommendations of the IMF's technical assistance mission to the RBM in December 2005. Liquidity forecasting and monetary operations, data compilation and electronic data transfers, macroeconomic analysis and models, payment systems, financial stability/banking supervision and foreign exchange management/investment were emphasized as prospective cooperation areas. The RBM also expressed interest in receiving technical assistance from Norges Bank on accounting, audit and risk management, and currency management. Other areas of interest included strategic planning, human resources and capacity building, organization structure and governance issues in general.

The Norwegian development authorities have long experience with technical cooperation between Norwegian institutions and corresponding institutions in developing countries. The Norwegian model for institutional cooperation requires an agreement covering a technical assistance plan as well as a budget between the two cooperating institutions. The Norwegian authorities then transfers budget funds in line with this agreement to the developing country's cooperating institution, which draws on these resources to finance program implementation. Norges Bank wanted to base the administrative framework and arrangements for the development assistance on the structures developed by the Norwegian development authorities and the IMF. Alternative cooperation models were discussed by the RBM, the IMF, the Norwegian development authorities and Norges Bank. Given the IMF's ongoing financial programs with Malawi and its long technical cooperation relationship with the RBM, close collaboration between the IMF and Norges Bank appeared natural. It was therefore decided that

Norges Bank's technical assistance to the RBM should not follow the traditional Norwegian bilateral cooperation model. Instead, Norges Bank's technical assistance should be channelled and administered through the IMF's technical assistance programs, but financed by the Norwegian authorities.

Consequently, it was agreed that the execution of the technical assistance program with the RBM would be under the supervision and quality control of the IMF through the Monetary and Capital Markets Department (MCM), which should work in cooperation with Norges Bank. The IMF would employ and supervise experts for the technical cooperation program, employing experts from the IMF's roster of experts. In the selection of short-term experts, the MCM would give due consideration to Norwegian nationals, particularly staff of Norges Bank – who could call on the IMF's specialist knowledge in this area. Since the technical cooperation program has been administered by the IMF, the experts from Norges Bank have been granted leave of absence during the assignments and received remuneration and allowances from the IMF. In addition, the short-term experts would normally be allowed to use some working time in Norges Bank for preparation and follow-up of projects, and to maintain the continuity of relationships with the RBM staff.

In the period March-September 2006, discussions took place between the RBM, the IMF, the Norwegian development authorities and Norges Bank regarding the scope and objectives, contributions and obligations, reporting procedures and detailed budgeting of the technical cooperation program. Furthermore, prospective areas of technical cooperation, and how the assistance could be organized and scheduled, were discussed. In accordance with the standard framework and organization of the Norwegian development assistance, the Norwegian authorities' budgeting and monitoring of the technical cooperation program with the RBM was delegated to the Norwegian Embassy in Malawi. A Letter of Understanding (LoU) was signed by one of the Deputy Managing Directors of the IMF and the Norwegian Ambassador to Malawi at the end of September 2006.

II. Objective and framework of the technical cooperation program

The main objective of the technical cooperation program has been to support the effort to strengthen and modernize the RBM, building enhanced capacity at the RBM to operate a professional and efficient central bank that is focused on core central bank activities, and based on best central banking practice. The RBM is also responsible for supervision and regulation of the financial sector. In Norway, these activities are executed by a separate entity, the Financial Supervision Authority of Norway. It was therefore decided that supervision of financial institutions (e.g. risk-based on-site and off-site) should not be incorporated in the technical cooperation program, and that this task should remain the sole domain of the MCM/IMF (including IMF's East AFRITAC⁸). However, technical assistance on financial stability issues was incorporated.

⁸ The East AFRITAC is one of IMF's regional technical assistance centers, serving eastern Africa (including Malawi) and based in Dar es Salaam, Tanzania.

It was agreed that the technical cooperation program should be implemented in a flexible way within the approved budget and timing constraints. Changes to the timing of a specific activity with no budget consequences could be agreed between the RBM and the MCM. The project areas and their sequencing could be revised in the course of the program period, but the total number of short-term expert visits should be within the overall budget envelope. In particular, the project activity should aim at incorporating the relevant recommendations of the 2008 Malawi FSAP⁹. Amendments to the program that required changes to the budget (either to the overall program budget or a significant reallocation of resources among budget lines) had to be discussed with, and agreed by, the Norwegian Embassy in Malawi.

Even though the broad-based technical cooperation arrangement between the RBM, the IMF and Norges Bank had a medium-term perspective (3-5 years), the first phase of the approved program had a duration of only seventeen months (October 2006-January 2008), with a possibility of extension based on the assessment of the results in the first phase. At an early stage it became clear that the agreed program ought to be extended. In the letter of the Malawian Minister of Finance (October 2007), the progress achieved under the first phase of the project was noted, and an extension to end-2009 was requested. The RBM found that the technical cooperation delivered had been based on their needs and was very beneficial. It was generally concluded that the mix of long-term advisor and short-term experts had been a fruitful approach.

In accordance with the request of the Malawian authorities, it was agreed to extend the program to end-2009. During the second phase of the technical cooperation program, previously delivered technical assistance was continued in a wide range of central bank activities. As in the first program phase, it encompassed a resident advisor and some 10 short-term project visits each year. In January 2008 and prior to the launch of the second phase, the resident advisor made a debriefing/briefing visit to the IMF. In April 2008, the Senior Management of the RBM reviewed and assessed their experiences with the technical cooperation program, and concluded that the program had been very useful in rationalizing the RBM's structure, systems and operations. In addition, reports from the several areas covered concluded that the technical cooperation had been compatible with the needs. At the same time, the RBM requested that the technical cooperation program for 2008-09 should incorporate an organizational review of the RBM, which required some reprioritization of the planned activities.

In July 2009, in light of the 3-5 year perspective for the technical cooperation program and the successful implementation to date, the Malawian Minister of Finance requested a further extension for the period 2010-11. With the progress achieved in the various areas, the RBM favored a somewhat reduced two-year technical cooperation program that ensured that the positive outcome of the previous projects was sustained and strengthened further.

The extension was also discussed at a meeting between representatives of the RBM, the IMF, the Norwegian Ministry of Foreign Affairs and Norges Bank during the IMF/WB Annual

⁹ The IMF's Financial System Stability Program (FSAP) missions were conducted in July and December 2007, and the FSAP report was issued on June 27, 2008.

Meetings. Both the Norwegian development authorities and Norges Bank were in favor of extending the technical cooperation program to end-2011. As before, the program would be financed by the Norwegian development authorities and implemented with the help of a resident advisor. However, the presence in Malawi would be progressively limited towards the end of the program to further promote the RBM's taking ownership of the reform process. The short-term expert visits would also be somewhat front-loaded. Overall, the 2010-11 program would provide about 1 person-year of assistance by the resident advisor (a long-term assignment of 8 months in 2010 and two short-term assignments of 2 months each in 2011) and 10 two-week expert visits, of which the majority were likely to take place in 2010.

The budget for the technical cooperation program has only covered costs related to the short-term experts, the resident advisor and briefing/backstopper activities. For instance, no additional budget line has been included to facilitate workshops and project related cooperation and training in Norges Bank or other central banks of relevance. Project related study tours to Norges Bank and "best practice" central banks in the Southern and East African region would be of great value for the capacity building of the RBM staff. Twice, the Norwegian Embassy to Malawi made grants available for project related study tours and training visits to facilitate such institutional cooperation. As a result, in September 2007 and September 2009 the technical cooperation program was complemented by one-week visits by the RBM staff to Norges Bank to learn about and discuss Norges Bank's central bank processes in operation and to interact with their counterparts.

The September 2007 study tour to Norges Bank comprised 9 staff members of the RBM (led by the Deputy Governor), while the September 2009 study tour comprised 5 staff members (led by an Executive Director). Both study tours were very beneficial in that they permitted the RBM staff to understand how the techniques discussed in the technical cooperation program were implemented in practice, and the RBM as well as Norges Bank benefitted from the interactions. One study tour on monetary and foreign exchange operations was also made to the Bank of Uganda in December 2007, and further regional study tours are envisaged during 2010-11.

III. Implementation of the technical cooperation program

1. Role of Technical Experts

An important feature of the technical cooperation program was the establishment of a resident advisor position. The resident advisor should focus on the implementation of the technical assistance projects and on issues related to how to operate a modern central bank, including governance and institution building. An important role of the resident advisor has been to prepare the respective projects and visits of the short-term experts, to participate in the meetings and work during the expert visits and in the drafting of the project reports, and to follow-up the implementation of the projects.

The resident advisor reported to the Governor through the General Manager and worked closely with the RBM's Senior Management, department directors and other staff on project related issues. To enhance the efficiency and usefulness of the advisory services, the resident advisor has occasionally attended e.g. Senior Management meetings where issues of relevance for the technical cooperation program would be discussed. However, the resident advisor did not have a formal advisory role on policy issues, but was rather an interlocutor or teammate on a wide range of issues on how to operate a central bank. To facilitate a broad based and thorough engagement in the activities of the RBM and close cooperation with the staff of the RBM, the resident advisor should comply with the general conditions of service at the RBM. Macroeconomic and financial policy advice was provided by the African Department's team for Malawi in the framework of surveillance and IMF program consultations.

As illustrated by the project articles in Chapters III-XII, the technical cooperation program has encompassed a number of short-term experts covering different project areas. Experts were identified and employed in accordance with the usual procedures of the Fund, with significant synergies recognized in the coordinated use of Norges Bank expertise. As a result, staff from Norges Bank has constituted most of the short-term expertise for the projects. When more appropriately experienced staff was available on the IMF roster, or the Norges Bank could not identify and/or release these from its staff, the IMF employed experts from its roster. This has been done, for example: twice for accounting expertise and once to obtain specialist expertise in job grading in the context of the organizational review.

A major consideration in the selection of the short-term experts has been to identify experts with specific skills to meet the particular needs of the respective projects. The short-term expert was expected to have direct operational experience of the project topics and ability to transfer that experience. The technical assistance provided by the short-term experts has to a major extent been in way of hands-on involvement, presentations, end-of-visit reports and subsequent final reports in cooperation with the resident advisor.

Short-term technical assistance has been provided through individual visits to the RBM, where the short-term expert has been assisted by the resident advisor. In accordance with Norges Bank's framework for the technical cooperation program, the short-term experts have on occasion also been consulted and have provided additional information, comments and suggestions following their return to their regular positions at Norges Bank, on project-related issues raised by the RBM staff.

2. Reporting Format and Feed-Back on Project Reports

The reporting format and procedures applied to the projects in the technical cooperation program are outlined below. They have largely followed the usual IMF approach, with some practical adaptations given the program's pilot features.

Terms of Reference: Prior to the start of each short-term project, the RBM and the resident advisor draw up a Terms of Reference in collaboration with the MCM/IMF and the prospective

short-term expert, covering project issues like background, purpose, scope of work/priorities, expected results and reporting.

Aide-Mémoire: This has been the final short-term visit report, and it has presented the background, findings and assessments, recommendations and action plan for each two-week visit. The Aide-Mémoire is worked out in cooperation with the resident advisor and reviewed by the RBM's Senior Management before being forwarded to the IMF. This has ensured that the RBM is familiar with and in broad agreement with the report and is committed to the follow-up of the action plan.

The Aide-Mémoires have had a fairly standardized format, and they have targeted a limited audience that is familiar with the relevant RBM issues and documents, previous technical cooperation project reports, the IMF Malawi consultation and FSAP/PRGF reports, etc. The "final" Aide-Memoire is circulated to the IMF (MCM, AFR, IMF's Resident Representative in Malawi) for review.

Since the Aide-Mémoire has been regarded as a "final", internal document, the reviews of the IMF have focused on addressing factual errors/"misadvise" and providing general types of feed-back that could prove useful for further project work. For instance, they considered whether the advice was sensible/useful, and consistent with previous IMF advice, as well as taking account of the experiences of relevant, best-practice central banks. References to similar IMF technical cooperation projects in other central banks and to papers and publications of relevance have been very helpful.

Working Paper: This format has only been used on a few occasions; i.e. to provide detailed descriptions of specific routines, procedures and features. The preferred reporting format in connection with a two-week project visit would normally be an Aide-Mémoire that sometimes included more detailed appendices. Referee comments on a Working Paper were provided by the IMF.

Technical Supplement Paper: This is a purely technical compilation of relevant templates, guidelines, reports, etc. from other institutions; mainly from Norges Bank, and not subject to review by an IMF referee.

Monthly Report: By the resident advisor to the MCM/IMF and the IMF's Resident Representative in Malawi, and with a copy to the Governor/Deputy Governor/General Manager of the RBM. Comments were provided by the IMF backstopper on occasion.

3. Scope and Financing of the Technical Cooperation Program

By end-December 2009, the technical cooperation program between the RBM, IMF and Norges Bank had lasted 3¼ years (October 2006-December 2009), comprising technical assistance by a resident advisor and 33 two-week project visits of short-term experts. The table below presents the sequencing of the various two-week project visits. The total financial support of the

Norwegian Embassy in Malawi for this period amounted to nearly USD 1.4 million and equaled nearly 5 person-years. The Norwegian development authorities have agreed to finance the extended and somewhat reduced technical cooperation program during the period January 2010-December 2011. The total budget envelope for the third phase of the program is about USD 750,000, and covers, inter alia, a resident advisor assignment of 12 months, 10 two-week visits and an evaluation project.

Number of two-week project visits of short-term experts, October 2006-December 2009

Project Areas	4th qtr. 2006	1st half 2007	2nd half 2007	1st half 2008	2nd half 2008	1st half 2009	2nd half 2009	Total
Organization, Management, Use of Resources	1	2		1	3*		1	8
Accounting; Automation				2			1	3
Currency Management	1	1	1			1		4
Payment Systems		1	1		1			3
Financial Stability						1	1	2
Liquidity Forecasting and Monetary and Foreign Exchange Operations	1	1	1	1		1		5
Foreign Exchange Reserve Management						1		1
Macroeconomic Analysis/ Models				1	3		1	5
Databases						1	1	2
Total	3	5	3	5	7	5	5	33

* RBM's Organization Review.

IV. The technical cooperation projects

A general assessment of the program results by the IMF program backstopper is presented in Chapter XIII. In Chapter II, the main features of Malawi's current economic and financial structure and policies, and the recent IMF programs with Malawi, are addressed.

The main objectives, findings and lessons of the various projects are addressed in Chapters III-XII of this Occasional Paper. The chapters are based on the project reports, and written by the short-term experts and the RBM staff in cooperation with the resident advisor (Jon A. Solheim). Furthermore, valuable comments have been provided by the RBM staff, the IMF referees and Asbjørn Fidjestøl.

In Chapter III, Organization, Management and Use of Resources, Harald Bøhn, Ellen Johanne Caesar and Steinar Selnes (with reference to J. Andre Geldenhuys) summarize the findings and lessons from the various projects on the RBM's organization review, the RBM's new governance structure, the strategic planning and budgeting process, risk management, and issues related to staffing, performance evaluation, remuneration and grading.

During the program implementation, it was recognized at an early stage that governance issues such as organization, management and use of resources were essential for the efficiency and modernization of the RBM. Even though the RBM had in place a comprehensive and complex planning and monitoring system, comprising the main elements and tools for planning and monitoring that one would expect to find in a well-run organization, there was a need to strengthen the interconnections between strategic planning, risk management and budgeting and to align the strategic plans to the business plans and the individual performance contracts. A number of projects related to organization, governance and management were therefore incorporated in the technical cooperation program. This resulted in concrete recommendations on ways to simplify and streamline the organizational structure and the framework for strategic planning, and the tools related to business plans, risk management, review processes and performance management. As underscored in Chapter III, the main objective of the different project visits has been to strengthen the RBM's ability to implement in a comprehensive manner an efficient organization with an integrated framework for governance and management.

In Chapter IV, Automation of the Transaction and the Accounting System, Chris Ford and Steinar Selnes (with reference to Bernhard J. Thompson) address considerations and plans in connection with a gradual move from largely manual transaction and accounting routines to more automated systems. At the RBM, the reconciliations between the General Ledger and the various other systems have been done manually, and each trade and payment has had to be manually inputted into several systems. The manual accounting routines have involved a lot of human intervention at the same time as the operations have become more complex with increased transaction volume. The scope for automation of the RBM's transaction and accounting systems was therefore defined as a project theme. After considering alternative development strategies, a strategic decision was taken to draw up a concrete project plan for replacing the RBM's current accounting system with a system that both provided scope for future development and could provide for automatic interfaces with the RBM's legacy accounting infrastructure. In Chapter IV, the transaction and accounting system issues confronting the RBM and the short-term experts during the various project phases are outlined.

The total costs associated with the RBM's currency role constitute a relatively high share of the RBM's budget expenditure. Although the authorities are promoting the development of electronic interbank systems and systems for payment services in cooperation with the banks, a significant proportion of all business transactions are still conducted through cash payment. Cash is expected to play an important part in the Malawian payment system for many years to come. The overall objective of the project on Currency Management has therefore been to achieve efficiency gains in the distribution and handling of currency, and cost savings through reviewing and streamlining the existing currency management framework. In Chapter V,

Currency Management, Trond Eklund and Peder Natvig in cooperation with Moza Zeleza cover a wide range of currency management issues, including the RBM's role in the framework for future currency management, denomination structures and security features of coins and banknotes, the procurement and tendering process, stock holding, and currency working routines.

The Malawian payment system has been functioning relatively well overall, but the formulation and implementation of the RBM's oversight role has not been clearly defined. In Chapter VI, Payment Systems, Asbjørn Enge and Kjetil Watne in cooperation with Lenia Banda and Fraser Mdwazika, address the payment system's oversight role and functions, principles for assessments of designated systems, the annual payment systems report and the vision and strategy for a national payment system. The main purpose of the payment systems project has been to provide advice on the definition and execution of the RBM's oversight role. In Chapter VI, particular emphasis has been placed on how to establish and implement the framework for the RBM's oversight role and functions, and on providing advice and guidance in connection with updating and revising the Vision and Strategy Framework for Malawi's national payment system.

In Chapter VII, A Framework for Enhancing the Surveillance of Financial Stability, Snorre Evjen addresses the definition of financial stability and the purpose of financial stability reports, the framework for enhanced macro-prudential analysis, and a detailed outline for a prospective financial stability report. One of the central banks' main roles is to contribute to maintaining the stability of the financial system. An increasing number of central banks are publishing financial stability reports (FSR), but until now only a few African central banks have published FSRs. Since financial stability is explicitly included in the mandate of the RBM and in view of the increasing international emphasis on financial stability issues, it was decided that advice would be given on how to implement a more comprehensive framework for financial stability analysis. As outlined in Chapter VII, the focus of attention was on establishing a framework for financial stability reports, both the process of production and the contents of such reports. Organizational issues and crisis resolution issues were also addressed. The RBM's first FSR for external publication will be discussed by the RBM's Monetary Policy Committee in May 2010, and will thereafter be issued for external publication. Future FSRs will be issued semiannually.

In Chapter VIII, Liquidity Forecasting and its role in the Monetary Policy Implementation in Malawi, and in Chapter IX, Monetary and Foreign Exchange Policy Implementation, Morten Jonassen addresses issues related to liquidity forecasting, the framework for market-oriented monetary operations and the market-based mechanism for exchange rate determination. The RBM has a relatively long history of IMF technical assistance on liquidity forecasting and monetary operations, but the absorption has been uneven and many recommendations have not been adopted.

Liquidity forecasting is a crucial element in the implementation of monetary policy, but the advice of previous technical assistance missions to develop an econometric liquidity forecasting model appeared, in retrospect, somewhat over-optimistic in view of staff and data constraints. In this project, priority was assigned to developing a liquidity forecasting spreadsheet model, which links together all factors affecting Reserve Money (RM). Chapter VIII outlines how to establish

a fully operational liquidity forecasting framework. This requires centralization of a wide range of information on financial transactions which affect the main items of the central bank's balance sheets, including the sources of RM creation which are not under the control of the central bank (autonomous factors) and those which are under its direct control (policy position). The main purpose of the liquidity forecasting exercise is to estimate the quantity of RM prior to possible RBM operations, and compare it with the RM target set by the RBM.

Although recent years' formulation and implementation of monetary policy have served Malawi well, the monetary policy implementation has also been facing major challenges. Central bankers around the world generally agree on the benefits for the economy of using market-based instruments to implement monetary policy. As underscored in Chapter IX, the project on monetary and foreign exchange operations aimed at supporting the process toward implementation of a more market-oriented framework for the RBM's monetary and exchange rate policy. The projects addressed in Chapters VIII and IX have been impacting positively on the RBM's policy-making capacity and capabilities, though the overall effect in improving policy will take some time to be confirmed.

In Chapter X, Foreign Exchange Reserve Management, Steinar Selnes reviews the RBM's reserve management policy, and provides advice on ways to strengthen it further in accordance with best central bank practices and standards. Like most other central banks, the RBM holds external reserves in accordance with liquidity and safety principles. Subject to compliance with the two principles, the RBM invests external reserves with the goal of optimizing the return over the long term. Enhanced exchange rate flexibility is expected over time, and the RBM has therefore been considering reforms to the foreign exchange management policy that would introduce more flexibility and ensure alignment with underlying fundamentals, consistent with Malawi-specific circumstances.

In Chapter XI, Databases – Issues and Solutions, Farooq Akram and Jostein Eide provide advice on database systems in light of the data situation at the RBM in general and the Research and Statistics Department (RSD) in particular, and on the data requirements for the macroeconomic and financial stability analyses. Economic analyses at central banks do not only require reliable economic statistics, but also easy and timely access to such statistics to conduct analyses within rather limited time frames. Improved accessibility of data for Malawi would encourage and facilitate more analysis and empirical research on the Malawian economy not only by the staff of the RBM, but also by external researchers in Malawi and abroad. The existing database system was assessed and advice was provided on an alternative way to store and manage the RBM's databases. In Chapter XI, alternative database technologies are also evaluated, and the establishment of a new database system in EViews, which is also used by the RSD for developing and using empirical models for analyses and forecasting, is addressed. The EViews database can also be used to publish data on the RBM's intranet and internet pages.

In Chapter XII, Macroeconomic Analysis and Models, Farooq Akram and Anne Berit Christiansen address input to the monetary policy process, external reports and communication policy, and forecasting and policy analyses models. With more economic analyses contemplated

on the interactions between the monetary and the real economy sectors, developing a model that interacted with a real economy model was assigned high priority. The main aim of the project on Macroeconomic Analysis and Models has been to assist the RSD in strengthening its capabilities to conduct macroeconomic analyses and their integration in relevant policy documents. Among other things, the RSD compiles and publishes financial statistics, describes and analyzes economic developments, produces policy papers and undertakes economic research. Given the wide range of tasks and bearing in mind the human and technical resources available to the RSD, the project focused on the development of empirical models and integration of macroeconomic analysis in key policy documents and organization of the RSD.

V. Some concluding observations

The implementation of the technical cooperation program has been in broad accordance with the program plans. Chapter XIII, Interim General Assessment of the Technical Cooperation Program between the Reserve Bank of Malawi, the International Monetary Fund and Norges Bank, 2006-2009, states that the technical cooperation program was universally seen as a success and that the project has resulted in visible changes in the RBM's governance, institutional and operational structures. It is emphasized that many of the reasons for success are related to the central-bank-to-central-bank arrangement through which the technical assistance has been delivered. The active role of the authorities and the contribution of a resident, long-term advisor as a resource person and facilitator, were deemed important to the success of the program. Moreover, the project reports (Aide-Mémoires) have been the result of comprehensive discussions with the RBM and are reviewed by at least one member of the RBM's Senior Management before being submitted to the IMF. This procedure has proved to be important for achieving full candor and trust in the discussions with the RBM.

Delay in the RBM's implementation of some recommendations has been seen by the RBM staff itself as a constraint on the accomplishment of project objectives. Such delays have resulted from the need for all staff to internalize the required changes, the generally slower pace of implementation in Malawi, as well as some resistance to change.

All in all, the technical cooperation program between the RBM, the IMF and Norges Bank has proved to be a fruitful development model, which complements other IMF programs by bringing in more resources and people with varied background. The technical cooperation program has some unique features that could allow it to serve as a pilot case for future technical cooperation arrangements coupling experienced central banks with those in developing countries. Furthermore, Norges Bank has found the technical cooperation program with the RBM more effective and result-oriented than previous technical assistance arrangements. As a result, Norges Bank has stated that it would be prepared to consider cooperation with the IMF and the Norwegian development authorities to establish a similar technical cooperation program with a central bank in another developing country.

Chapter II

Main Features of Malawi's Economic and Financial Structure

Neil Nyirongo¹⁰

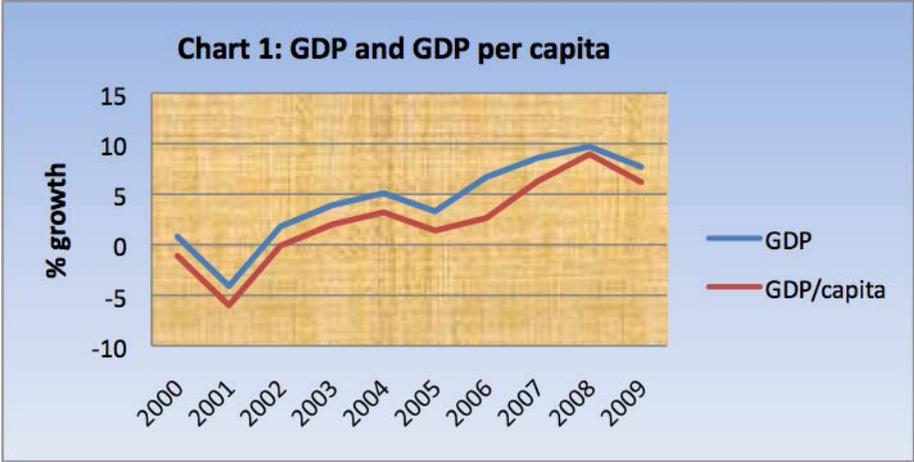
I. Overview of the Malawi Economy

Malawi is a landlocked developing country with a population of 13.9 million, characterized by widespread poverty as evidenced by a Gross Domestic Product (GDP) per capita of USD 343.6 as of 2008. Of the total population, 90 percent live in rural areas. The country's economy is heavily dependent on agriculture that employs about 85 percent of the total population, contributing about 40 percent to GDP and 80 percent of foreign exchange earnings.

Malawi has a very narrow export base with tobacco as the major foreign exchange earner, contributing an average of about 70 percent of the total foreign exchange earnings each year. Most of the foreign exchange earnings occur from April to October when the tobacco auctions take place, leading to strong seasonality of foreign exchange earnings. In addition, the seasonality of foreign exchange outlays is quite different from the seasonality of foreign exchange earnings. The strong seasonality of foreign exchange earnings and outlays is a major challenge for monetary policy. Other major foreign exchange earners include cash crops such as tea, sugar, cotton and coffee.

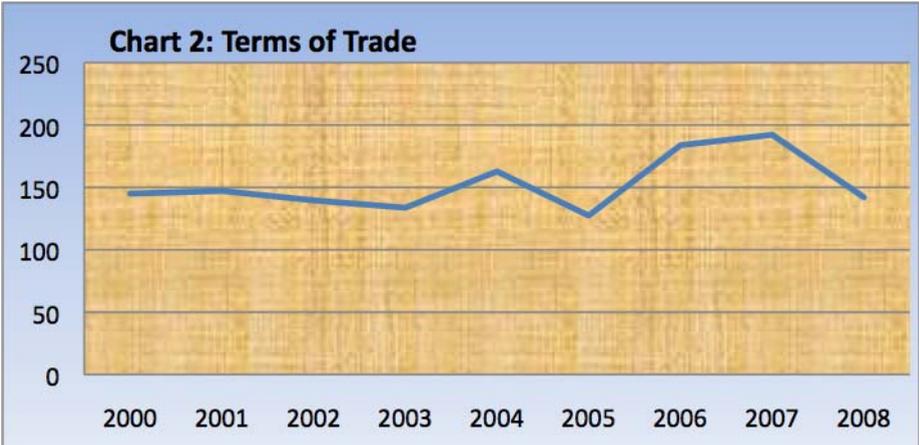
Because Malawi is a landlocked country, its geographical position imposes a structural constraint to trade as manifested through high transportation costs. During the period 2005 to 2008, Malawi registered an average real growth rate of 7.0 percent, largely owing to a stable macroeconomic environment and good climatic conditions, see Chart 1. GDP per capita has also increased markedly in recent years.

¹⁰ Neil Nyirongo is Executive Director of the functional area Economic Services at the Reserve Bank of Malawi. The functional area of Economic Services comprises the Research and Statistics Department, the Treasury Department, the Banking and National Payment Systems Department and the Exchange Control and Debt Management Department.



Sources: National Statistical Office and the Reserve Bank of Malawi

Overall, Malawi remains highly vulnerable to external shocks due to heavy dependence on agriculture, particularly tobacco exports, and donor finances. There are considerable fluctuations in the prices of Malawi’s agricultural exports as well as in the prices of important imported goods such as petroleum products and fertilizer, see Chart 2.



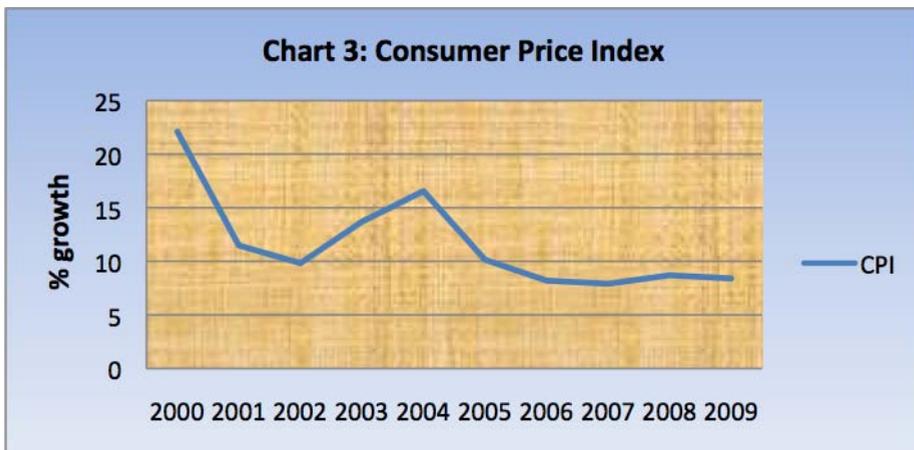
Source: Reserve Bank of Malawi

The Reserve Bank of Malawi (RBM) designs and conducts its monetary policy by targeting monetary aggregates through reserve money programming. The RBM has no direct control over broad money, but it has direct control over its balance sheet items net domestic assets and reserve money. The RBM’s main focus is on regulating central bank lending to government and the banking system.

The exchange rate is an important policy variable for a developing and import-dependent economy like Malawi. It affects most sectors of the economy through the high pass-through effects to domestic prices. Thus, while the RBM is committed to strengthening the role of the market in exchange rate determination, it is equally committed to ensuring smooth developments in the exchange rate and has from time to time intervened in the market to smooth out undesirable volatile movements.

II. Recent economic developments and prospects

The year 2008 was marked by strong economic activity notwithstanding the adverse external conditions in the wake of the global liquidity squeeze and tailwinds from rising fuel and food prices. Monetary policy remained an important lever for keeping inflation moderate embodied in the pursuit of a monetary targeting regime, see Chart 3. The exchange rate policy was geared at supporting the accumulation of adequate reserves to cushion the economy against terms of trade shocks.



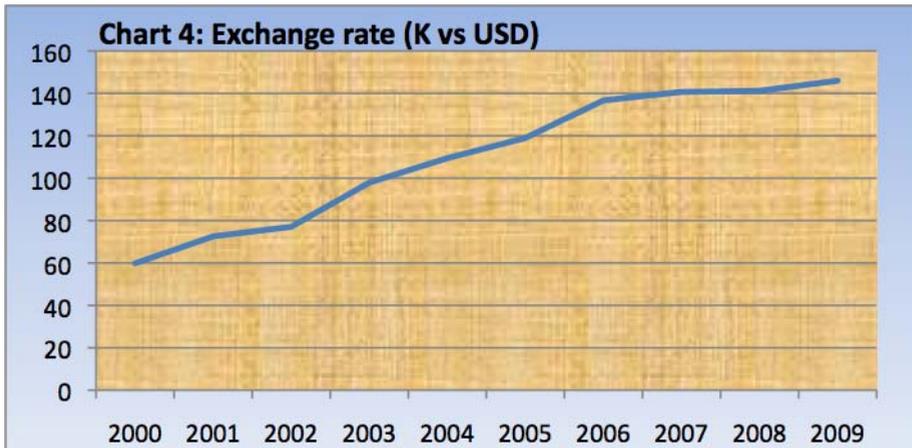
Source: National Statistical Office

Macroeconomic outturn was robust with real GDP growth at 9.7 percent, the highest level since 1995, as a result of strong agricultural production and a buoyant communication services. In 2009, the GDP growth slowed to 7.7 percent. Inflation remained within single digits, averaging 8.7 percent for 2008 and 8.4 percent for 2009. Government operations were expansionary in 2008 and 2009 as evidenced by the widening of the fiscal deficit during the period. This was principally on account of substantial outlays incurred in the procurement of fertilizer for the input subsidy program as international prices rose and the list of beneficiaries expanded during the year.

Deteriorating terms of trade and high fertilizer import prices and fuel costs, which somewhat offset solid growth in tobacco prices and exports, widened the current account imbalance.

Consequently, the Executive Board of the International Monetary Fund (IMF) approved a one-year arrangement under high access component of the Exogenous Shock Facility (ESF) for Malawi in December 2008 to support the authorities in their adjustment to the shock.

Against a backdrop of the US dollar (USD) weakening, the exchange value of the Kwacha (K) held up fairly well against the USD at around K140 and subsequently firmed up against the other major currencies that weakened against the dollar in light of the global financial markets turbulence, see Chart 4.



Source: Reserve Bank of Malawi.

Over the next five years (2009-2014), the Malawi government will be implementing a medium term development plan that has nine key priority areas including agriculture and food security, green belt irrigation and water development and infrastructure development. On the monetary front, the RBM will enhance the monetary policy management framework to slow down monetary expansion so as to contain pressure on inflation and exchange rate. All these policy measures are geared to culminate in the attainment and maintenance of a high economic growth rate of not less than 6 percent annually for the next five years in order to significantly reduce poverty levels in the country. These policy measures will be supported by a new three-year arrangement under the Extended Credit Facility that was approved by the IMF Executive Board on February 19, 2010.

III. Structure of the Malawi financial system

The RBM is the central bank of Malawi and carries out all central bank functions. It was established under an Act of Parliament in July 1964 and started its operations in June 1965. As per the 1989 revised Act, the RBM has a number of principal objectives that aim at ensuring price and financial stability. However, *“in performing any functions in the pursuit of, its principal objectives, the Bank shall act with due regard to the interest of the national economy*

and to the economic policies of the Government". Before the revision of the Act in 1989, the RBM reported to the Ministry of Finance. The 1989 RBM Act, however, made the RBM independent from Government and gave it the full mandate to conduct monetary policy while ensuring that monetary developments are consistent with fiscal developments.

Table1. Size and Structure of the Malawi Banking System. 2008

	Total Assets			Ownership	
	<i>Billion K</i>	<i>Percent of total assets</i>	<i>Percent of GDP)</i>	Local	Foreign
National Bank of Malawi	66.6	40.4	12.5	100.0	0.0
Standard Bank of Malawi	46.8	28.4	8.8	39.9	60.1
First Merchant Bank of Malawi	22.9	13.9	4.3	77.5	22.5
NBS Bank	20.7	12.6	3.9	77.5	22.5
All other banks	7.7	4.7	1.4	-	-
Total of banks	164.7	100.0	30.9	-	-

Sources: National Bank of Malawi, Standard Bank of Malawi, First Merchant Bank of Malawi, NBS Bank and Reserve Bank of Malawi.

The structure of the Malawi banking system and size as percent of GDP is illustrated in Table 1. There are 11 banks in Malawi, which are principally engaged in financial intermediation.

There are approximately 724 Other Financial Corporations (OFC) in Malawi, including 22 insurance corporations and brokers, 614 pension funds, 8 portfolio and investment managers, an investment trust, 2 discount houses, a finance company and 76 microfinance service providers. Among the microfinance companies are 57 savings and credit cooperatives (SACCOS) and the Malawi Union of Savings and Credit Cooperatives (MUSCCO). Although the SACCOS accept deposits, they do not presently report data, so their deposits are not included in the national definition of broad money. MUSCCO is an association that provides services to member SACCOS, including deposit and loan insurance and a central finance facility.

IV. Major reforms of the financial sector

Malawi has undertaken various reforms in the financial sector since the early 1980s in an effort to remove structural rigidities that hamper growth of the financial sector. The reform program commenced with the revision of the RBM Act and the Banking act in 1989. In 1990 the Capital Market Act was promulgated paving the way for more financial services.

In response to the financial sector reforms, several banking and financial institutions entered the market. Two commercial banks, the Finance Bank and First Merchant Bank, started their operations in 1995. In 1998, a discount house, Continental Discount House, started operations which further deepened the money markets. In 1999, another bank, Loita Investment Bank, was licensed. In 2001, FINCOM Bank and Inde Bank (as a merger with Inde Financial Services) were licensed to start operations as commercial banks. Additionally, First Discount House was licensed to operate as a second discount house in the country.

Another major development was the setting up of the Stockbrokers (Mw) Ltd (SML); basis for a fully fledged stock exchange that started operations in 1996. As more financial institutions have entered the sector, competition has increased, leading to efficiency and effectiveness in resource mobilization. Currently, there are fifteen listed companies on the Malawi Stock Exchange. The RBM also initiated the establishment of Malswitch in order to facilitate the development of the financial system and promote an efficient payment system, clearing and adequate financial services in the economy; and provide a platform for future private initiatives in the payment system.

Chapter III

Organization, Management and Use of Resources

Harald Bøhn¹¹, Ellen Johanne Caesar¹² and Steinar Selnes^{13 14 15}

I. Background

In the technical cooperation program between the Reserve Bank of Malawi (RBM), the International Monetary Fund (IMF) and Norges Bank it was recognized that governance issues such as organization, management and use of resources were essential for the efficiency and modernization of the RBM. Although the RBM had in place a comprehensive and complex planning and monitoring system, comprising the main elements and tools for planning and monitoring that one would expect to find in a well-run organization, there was a need to strengthen the interconnections between strategic planning, risk management and budgeting and to align the strategic plans to the business plans and the individual performance contracts. Moreover, many of the tools and techniques that had been used by the RBM were provided by external consultants and had proved to be too advanced and complex to operate within the prevailing resource constraints, and in some cases they had not been geared to the particular needs of a central bank.

As a result, several projects related to governance and management have been incorporated in the technical cooperation program, resulting in concrete recommendations on ways to simplify and streamline the organizational structure and the framework for strategic planning, and the tools related to business plans, risk management, review processes and performance management. The main objective of these projects has been to strengthen the RBM's ability to implement in a comprehensive manner an integrated framework for governance and management. Most of the recommendations have been implemented or are in the process of being reviewed under the RBM's Rationalization of 2008 Organization Structure exercise. The rationalization exercise will be conducted in the first half of 2010, and the main objective of the exercise has been to address structural challenges and recurring staff complaints on some grading and human resource policy issues.

¹¹ Harald Bøhn was MCM/IMF short-term expert, and is Executive Director in Norges Bank (Norges Bank Administration from 2002 to 2009).

¹² Ellen Johanne Caesar was MCM/IMF short-term expert. She was Senior Advisor, Governor's Staff, Norges Bank Administration until April 2008 when she was appointed to Assistant Director of Finance, Department of Finance and Planning, University of Oslo.

¹³ Steinar Selnes was MCM/IMF short-term expert, and is Senior Advisor, Control and Compliance Department, Norges Bank Investment Management.

¹⁴ Mr. J. Andre Geldenhuys was also engaged as MCM/IMF short-term expert in the project on the RBM Organization Review, where he focused on issues such as the extent to which jobs are professionally evaluated and graded within an appropriate pay structure, how to develop an equitable salary/remuneration policy and an appropriate career policy framework.

¹⁵ We wish to thank Peter Rashid, Executive Director of Support Services, Director Crispin Mzengereza and staff of the SRD, Director Rangford Chokhotho and staff of the HRID, and Director Charity Mseka and staff of the AFD for helpful comments.

II. The RBM's organization reviews of June 2006 – July 2008

On June 1, 2006, some alterations in the corporate structure of the RBM were implemented, including the establishment of the Risk Management Department (RMD). All in all, the new structure was broadly in accordance with that of most central banks, but in a few areas the reporting lines differed from what may be regarded as “common practice”. In particular, the Accounting and Finance Department (AFD), which consolidated the RBM's budget and produced the management reports, was reporting directly to the Governor, while the Human Resources and Institutional Development Department (HRID), the Internal Audit Department (IAD) and the Risk Management Department (RMD)¹⁶ reported directly to the Deputy Governor.

The departments reporting directly to, respectively, the Governor and Deputy Governor had a central role in the strategy and budget process. In our view, the combination of responsibility for the overall strategy and performance of the RBM and responsibility for the current operations of separate departments might complicate the reporting line structure and result in a somewhat blurred responsibility structure. To strengthen the interaction between the strategic planning and budgeting process with the business plans and staff performance appraisals, it seemed essential to have an organization with clear lines of responsibility.

To facilitate that the organization and functions of the RBM be in accordance with the best practice of central banks, a sound legal basis is essential. While the RBM's prevailing legal framework may not have hindered the RBM from conducting its core central bank tasks, in a number of areas the existing Act provides little clarity and does not provide the RBM with the required powers. The Bill for amending the RBM Act is in accordance with the SADC¹⁷ Model Law, and would, inter alia, have specified the powers of the Board of Directors and the independence of the RBM, and clarified its regulatory structure. In particular, the Bill contains an amendment proposing the inclusion of up to two additional Deputy Governor positions. This would have facilitated a more straightforward organization with clear lines of responsibility.

However, there was major uncertainty related to the timing of the enactment of the Bill, and the inclusion of one or two additional Deputy Governors. Given our emphasis on developing a governance structure that could contribute to a more focused and efficient management of the RBM in the near future, we proposed that the General Manager should be included in the RBM's top level management, and assigned nearly the same role as the Deputy Governor. Furthermore, we recommended a revision of existing corporate structure. The RBM's activities should be built around four functional areas, i.e. Corporate Services, Support Services, Supervision, and Economic Services. Each functional area should be headed by an Executive Director, who reports directly to either the Deputy Governor or the General Manager. For instance, the functional areas of Corporate Services and Support Services may report to the Deputy Governor, while the functional areas of Supervision and Economic Services may report to the General Manager.

¹⁶ Later renamed to the SRD; Strategy and Risk Management Department

¹⁷ Southern African Development Community

Concentration on four key functional areas should provide clear lines of responsibility, and facilitate efficient and focused operations at the RBM. The resulting small number of relatively large functional areas could be comfortably managed by the Deputy Governor and the General Manager – and the Governor. The functional areas would prepare annual action plans for activities with associated performance goals which are approved by the Governor. During the year, there would be follow-up talks between the Governor / Deputy Governor/General Manager and the Executive Directors of the individual functional areas.

The three departments, HRID, AFD and RMD play an instrumental role in the formulation and follow-up of strategic planning/budgeting and review processes/performance appraisals. While the main elements of the RBM’s strategic planning/budgeting and review processes/performance appraisals appeared to be in place, the link between the various processes was missing in some cases. In order to strengthen the coordination between the departments it was recommended that the three departments should report to the same Head, i.e. the Deputy Governor. On the other hand, given the control and governance role of the Internal Audit Department, it would be in accordance with “best practice” that the Internal Auditor reports directly to the Governor and the Audit Committee. The General Counsel and Bank Secretary, and the Executive Assistant in the Governor’s Office and Director of Public Relations, should continue to report directly to the Governor.

In order to ensure close integration between the planning, budgeting and risk management processes of the RBM, there seemed to be a need for an organizational unit that would coordinate the work on strategic plans and business plans – and risk management – at different levels of the RBM. Although this function could be executed by various departments, it could be argued that the RMD should be assigned a wider responsibility. It was recommended that the RMD should also be assigned responsibility for planning and coordination of the RBM’s strategy and budgeting process, and for preparing reports on progress and status for the business plans. Moreover, the RMD should be re-named the Strategy and Risk Management Department (SRD).

The budgeting and budget performance are also essential ingredients in a comprehensive strategic planning framework. The responsibility for the budgeting process should remain in the AFD, and close coordination between the AFD and the new unit would be a prerequisite.

After these recommendations were followed up, the organization and management structure illustrated below was implemented from July 2008.

Governor	Deputy Governor		General Manager	
	Functional Area of Corporate Services	Functional Area of Support Services	Functional Area of Supervision of Financial Institutions	Functional Area of Economic Services
Bank Secretary	Administration	Accounting and Finance	Bank Supervision	Banking and Payment Systems
Internal Audit	Currency and Protective Services	Human Resources and Institutional Development	Supervision of Non – Bank Financial Institutions	Exchange Control and Debt Management
Special Duties	Information and Communication Technology	Strategy and Risk Management		Research and Statistics
				Treasury

Risk Management

As part of the reorganization, the RBM decided to establish a Risk Management Committee (RMC) with members from the Senior Management of the RBM. The Deputy Governor headed the Committee and the General Manager was alternate. Other members of the Committee were Department Heads at the RBM. After the organizational changes in 2008, we recommended that the RBM should consider changing the composition of the Risk Management Committee according to the new organizational structure with four functional areas. It could be argued that the committee structure in the RBM was generally too top-heavy.

Risk management is relevant across all areas of the RBM, and we proposed that all four functional areas should be represented at the Committee. Since the Strategy and Risk Management Department (SRD) is part of the Support Services functional area, it was suggested that the RMC should be chaired by the Executive Director of Support Services. The Director of SRD would be responsible for preparing the material for the meetings and should also be a member. Members from the other functional areas could be the Executive Director or the senior appointee from the area. The SRD should serve as secretariat to the Committee. The Committee should meet at least twice a year to discuss the semi-annual reports from the SRD. In addition, there should be ad hoc meetings when major issues need to be addressed.

With the overall risk management framework in place, it was recommended that the SRD (initially the RMD) should start to map out and clarify operational tasks, as well as its relationship with the Senior Management, the Internal Audit Department and the other departments of the RBM. An important task was to strengthen the links between risk management and planning.

In the beginning, a major task of the SRD (initially the RMD) was to work with the various departments on issues related to risk identification and risk evaluation. The SRD assisted the various departments in mapping out their major risk processes and tasks. The purpose of this exercise was to identify the activities and responsibilities that are most critical for the various departments to carry out. The process-mapping was documented for further use in the risk management process.

It was recommended that after receiving input from the various departments, the SRD should arrange meetings/workshops with each department to ensure that the people involved in the risk assessment had a common understanding of the criteria.

The SRD should obtain a total overview of existing routines and control activities within the RBM. Based on the risk evaluation, a gap analysis evaluating the existing coverage and management of the major risks identified should be carried out. In light of the findings, a plan for closing potential gaps between risks and control activities should be developed.

The table below illustrates how a risk assessment report and corresponding control activities from each department to the SRD would look:

Assessment of risk: C (Consequence) / P (Probability): High (H), Medium (M), Low (L) – provided that internal control activities are carried out according to the expressed purpose.

Business Area (Department)			Name	Date
Activity / Process What may go wrong?	Risk assessment		Control activities	
	C	P	Daily operations	Management follow-up

The SRD should assist and advise the functional areas/departments regarding questions related to the reporting exercise. In order to make this effective, strong commitment from the Senior Management is imperative. They should signal to the functional areas that all Departments are required to follow up and participate, and reply according to the set deadline.

It was recommended that the SRD should organize workshops with each functional area to present in detail the background and purpose of the risk identification and risk assessment exercise. The SRD should prepare a standard presentation and introduce the reporting templates to be used. The Deputy Governor and the General Manager should communicate to their underlying functional areas that risk management is important for the RBM and signal to their functional areas that full participation is required.

During this period, the SRD organized a Risk Identification and Rating Workshop facilitated by PricewaterhouseCoopers. The purpose was to improve the risk identification approach and secure the participation of senior management and middle level managers, especially those charged with day-to-day operations in their respective areas of responsibility. The process of identifying risks involved brainstorming on the types and nature of risks the bank is faced with and putting mitigating measures in place. Participants then considered the mitigating controls and ranked the risks on an ordinal scale. The process of ranking the risks involved voting individually on a computerized system, which produced an average from the individual rankings.

The outcome of this workshop provided a good starting point for a more detailed and bottom-up exercise. We suggested that when carrying out the next RBM's risk report, the various risks identified in the workshop should be included and assessed in the respective department/functional areas' risk report. In addition to forming the basis for the input to the semi-annual risk-report to the Board of Directors, the result of the risk assessment should give valuable input to the priorities and decisions to be taken at the Strategy Meeting.

III. RBM's new governance structure

1. The top level management

The Governor is the RBM's Chief Executive Officer, and the Governor and the Deputy Governor are members of the Board of Directors and appointed by the President. The Governor, the Deputy Governor and the General Manager constitute the RBM's top level management and should be regarded as one management layer.

2. The roles of the senior management in the corporate structure

The Board of Directors is responsible for the administrative and management policy of the RBM; while the formulation of monetary policy is left to the Monetary Policy Committee (MPC). The Board of Directors approves the RBM's Strategic Plan and the overall framework for the following year's business plan, budget and risk management. Moreover, it reviews the semi-annual reports on the implementation of the Strategic Plan, the overall business plan, the budget and the risk management assessment.

The senior management team (the Governor, the Deputy Governor, the General Manager and the four Executive Directors) acts as an advisory body for the Governor on overall management issues, e.g., the general implementation of the RBM's Strategic Plan. The senior management assesses the RBM's overall business plan and budget, and reviews performance reports on the implementation of the business plans and budgets before they are forwarded to the Board of Directors. Furthermore, the Risk Management Committee's semi-annual risk assessment reports are presented to the Board of Directors through the Senior Management.

3. The roles of the Executive Directors

In the new management structure, each Executive Director has line management responsibility for his/her respective functional area. This gives the Executive Director an important operational role with major responsibilities related to the planning and monitoring framework for the respective functional area, and facilitates efficient and focused operations at the RBM.

After consultation with the Deputy Governor/General Manager, the Executive Director approves the job description and the performance contracts for the respective department directors and assesses the performance of the respective department directors semi-annually. As part of the overall planning process, the Executive Directors provide input to the annual review of the RBM's Strategic Plan, including their view of the external environment and stakeholders' expectations, the main challenges facing their functional area, and strategic objectives and overall risk assessment of the functional area. In addition, the Executive Directors prepare a business plan and an overview of the budget figures for the entire functional area for the coming year, including principal objectives to be achieved and proposals for main projects. Prior to submission of the budget to the Governor/Deputy Governor/General Manager, the consolidated plan/budget proposal will be discussed by the Executive Directors. Presenting and defending the budget of the functional area at the Senior Management meeting will be the responsibility of the respective Executive Director.

In the new structure, the Executive Directors are responsible for implementing and maintaining the risk management framework, and for regular monitoring and reporting of risk within the functional area. They are also responsible for establishing, maintaining and testing the contingency plan for the functional area as a whole

On a semi-annual basis, the Executive Director shall prepare and forward to the SRD reports on status in relation to business plans and risk management. On a quarterly basis, status reports on the budget/accounts for the functional area as a whole are forwarded to the AFD.

The departments' business plans, budget figures and performance reports shall be reviewed and followed up at the functional area level and thus, form the basis for the Executive Directors' periodic reports. Based on input from the department directors, the Executive Director compiles the information on plans and budget, and consolidates it into one report.

The Executive Directors should have regular meetings with the department directors for briefing, giving directions, planning/discussing current operational issues, etc. In order to monitor the progress in relation to the respective business plans, the Executive Directors shall have quarterly follow-up meetings with the underlying department directors. The technical assistance to the Executive Directors' planning and monitoring activities should be provided within the functional area. The Executive Directors may select one or several persons within their area to provide assistance in connection with planning and reporting activities. Moreover, the SRD and the AFD may provide advice to the functional areas/departments on questions related to planning and reporting.

4. The roles of the department directors

The line management role of the department directors was hardly changed when the new organization was adopted on July 1, 2008. They remain responsible for implementing the departments' business plans and budgets. The directors provide input to the development and review of the RBM's Strategic Plan and to the overall risk management assessment. They submit plans and budgets, performance reports at mid-year (including budget forecasts) and year-end for their department through their respective Executive Director. The directors are responsible for everything which occurs within their defined sphere of responsibility (i.e., business plan and job description). Successful implementation of the new management structure requires a clear division of responsibility between the Executive Director and the respective department directors; i.e. to avoid micromanagement by the Executive Director and "upward delegation" by the department directors.

The department directors shall hold regular meetings with the subordinate managers each week for briefing, giving directions, planning/discussing current operational issues, etc. In addition, the performance of the subordinates shall be assessed on a semi-annual basis. Follow-up meetings, where progress in relation to respective plans is monitored, may be conducted monthly. With this management structure, it will not normally be the department director's responsibility to present and defend budget proposals or performance reports at the senior management meetings. This will be the responsibility of the Executive Director, but the department directors may on specific issues attend a Senior Management meeting.

The RBM plans to draft a Charter of Delegation to ensure clear division of responsibilities between the executive directors and the department directors.

5. The roles of the support departments

Within the new organizational structure of the RBM, the overall division of labor between the SRD, the AFD and the HRID will be:

- While the SRD is assigned the responsibility for the integrated framework for strategic planning and monitoring, the strategy meeting, the corporate Strategic Plan and the business plans, the HRID will remain in charge of the human resources policy, including performance measurement framework and performance contracts.
- The SRD has the overall responsibility for maintaining the overall planning, budgeting, monitoring and reporting framework, issuing guidelines and templates and coordinating relevant planning, budgeting and reporting activities for the RBM as a whole. The responsibility for the budget and accounts will remain in the AFD, which will compile the main budget figures to be included in the main report. The SRD consolidates the plans and the performance report of the functional areas, including the section on budget and accounts, and submits the main report to the Board of Directors through the senior management. Prior to submission of the budget to the senior management team, the Executive Director, Support Services will convene a meeting where the consolidated business and budget proposal will be discussed by the four Executive Directors.

6. The RBM's committee structure

Decision making in a committee with representation from different areas in the RBM may ensure that the interests of the different functional areas are being considered. At the same time, there is a risk that the responsibility for the decision becomes blurred. The risk is greater the more members there are in the committee. In many organizations, small committees have proven to function better than large ones. This may be due to the members' greater willingness to give priority to what is best for the organization as a whole instead of pursuing interests mainly relevant for their own department or functional area. Small committees may find it easier to take decisions which are not popular, and to make fewer compromises. It may also be argued that members of small committees will feel more responsibility than members of large committees.

There may be a conflict between having "efficient committees" and "comprehensive committees" that have membership and tasks covering the entire organization. Since the core units of the RBM are the functional areas, it should be possible to reduce most committees to just 4-5 members; one from each functional area. This would also open for appeals to a higher level in cases where that is appropriate. In addition, all committee members should have skills making them qualified for their position. In some committees, it is appropriate – and important – to have staff representatives as members. Reducing the number of committees and the number of members in each committee will reduce the work burden on senior management and department heads. This will make it possible for them to spend more time within their main field of responsibility. Altogether, the composition of a committee should be considered on a case-by-case basis.

To avoid this risk of blurred responsibility, it is important to define clearly the responsibility of each committee. Some committees are advisory, and it should be made clear to whom the committee gives its advice. The task should be reflected in the composition of the committee. Other committees are decision-making. Committees that are providing advice on issues which are the responsibility of an Executive Director should be headed by the responsible Executive Director. The meetings of advisory committees should be used to take notice of the different opinions given, and the decision-maker should use them to find the right solution.

Within the RBM many decisions of high importance for the functional areas are made in committees and prepared in the Support Services. The intention is to secure equal treatment of relevant issues in all areas. Such a system also ensures direct control of the decision making process. Examples of such decisions are hiring of staff and use of funds for training.

The use of performance management systems will make it possible to delegate many types of decisions to the functional areas. In addition to having the performance management systems and reporting requirements in place, this will require general guidelines for how decisions should be made to secure reasonably equal treatment in different parts of the RBM. Such a policy should render it possible over time to reduce the number of staff in the Support Services.

IV. The strategic planning and budgeting process

Before the new management structure was implemented, the RBM had in place a comprehensive and complex planning and monitoring system. As addressed in Section I, many of the tools and techniques that have been used by the RBM were too advanced and complex to operate with the prevailing resource constraints, and in some cases they were not geared to the particular needs of a central bank. Occasionally, they have also been too general, making them somewhat irrelevant for the business of the RBM. The RBM's strategy and business plans had to a certain extent lived their own lives apart from the budget, and risk management issues had been less integrated in the processes than required. All in all, there was a need to strengthen the interconnections between strategic planning, risk management and budgeting and to align the strategic plans to the business plans and the individual performance contracts.

The RBM should aim at gradually developing the Strategic Plan to be more forward looking toward a medium-term perspective. To achieve this and to provide better support for the Executive Directors, the preparations for the strategic planning process should be reinforced. The first step would be to put forward and discuss the planning guidelines and the agenda for the strategy meeting with the Senior Management, allowing for questions and discussions of the desired outcome of the strategic planning process. After issuing the guidelines, separate workshops might be held with the different functional areas as an integral part of their preparations for the strategic meeting. Finally, the input from the functional areas should be put together and issued along with the final agenda. A similar process to support the top management in their preparations should be considered.

The table below illustrates a possible planning calendar:

Deadline	Activity	Responsible
Early July	Circulating integrated planning and budgeting guidelines to senior management and department directors: timeline for the whole planning and budgeting process agenda and requests for preparations for the strategy meeting, including requirements for the mid-year progress report with a budget forecast requirements for business plans, budget, risk assessments and revised job contract (templates and guidelines)	SRD (in cooperation with AFD and HRID)
End-July	Risk Management Committee submits the consolidated risk evaluation report for the first half year to senior management as background for the strategy meeting.	SRD
Mid-Aug.	Preparations for the strategy meeting as requested by SRD, including a mid-year-progress report. Bottom-up process; input to the overall strategy and direction for the RBM. AFD prepares the assessment on the “financial outlook” for the coming year, as a background for the strategy meeting.	Governor/ Dep. Gov. / GM and the Executive Directors
End-Aug.	Senior management’s strategy meeting (facilitated and supported by SRD). Output; minutes to be submitted within two weeks, later resulting in annual revision of the Strategic Plan, including overall risk assessment.	Governor
End-Sept.	The pre-budget meeting with senior management. AFD issues request for preparations of the budget – the budget manual.	Governor/ Dep. Gov./ GM
Mid-Oct.	Deadline for the Executive Directors and departments to present endorsed business plans and budget proposals for next year.	Executive Directors
Mid-Nov.	Senior management team discusses SRD’s proposal for the RBM’s Strategic Plan, consolidated business plans and budgets for the following year. SRD coordinates and prepares the report, AFD prepares the figures. Executive Directors present/defend their budget.	Governor
Early Dec.	The Board of Directors approves the proposed Strategic Plan (incl. overall risk assessment for the RBM), and the report on the overall plans and budget for the RBM for the coming year.	Board of Directors
End-Dec.	Final approval of business plans and individual performance contracts.	Relevant superior

1. The strategy meeting.

The strategy meeting usually takes place at the end of August each year. In order for the Executive Directors to have enough time to prepare for the meeting, the agenda should be agreed with the senior management 3-4 weeks before the meeting takes place. Important features of the meeting include the following.

The Executive Directors present the status of their implementation of the present strategic plan, give an input to the overall risk assessment for the RBM and also present a review of stakeholders' expectations that may be relevant for the functional area. The Executive Directors are expected to submit their input about one week prior to the meeting. The presentation at the meeting should focus on the major issues, leaving room for questions and discussions at the meeting. In order to facilitate an open and fruitful discussion, the participation should be confined to the senior management team (including the General Counsel), with the SRD as a secretariat. The Chief Internal Auditor may be present as an observer.

As an outcome of the meeting, the minutes should state further direction and main challenges for coming years, main strategic goals, main goals and projects for the next year and the directions for the use of resources for the next year. The Strategic Plan should be updated accordingly, including an overall risk assessment, and then forwarded to the Board of Directors through the senior management.

2. The strategic plan

The outline of the RBM's Strategic Plan is based on the Balanced Scorecard approach (BSc). The business plans, also based on the BSc approach, should be in line with the Strategic Plan. The Strategic Plan should distinguish between operational and strategic issues. When updating the Strategic Plan one should consider moving the operational-related, short-term objectives in the strategic action plan to the business plans of the respective functional areas. Below is a possible outline for the Strategic Plan.

1. Background

The current mission, vision, principal objectives, core values and leadership criteria.

Brief review of the status in relation to the current strategic plan.

Brief review of the external environment and shareholders' expectations.

Review of the overall risk assessment.

2. Strategy formulation

Identify the RBM's main challenges for the core functions for the 3-year period, and the main strategic objectives for the functional areas of the bank sorted by the four perspectives: External environment – identify major work objectives/ in relation to the surroundings in which the RBM operates.

Strategic objectives covering the core functions and processes of the bank

Determine future changes in direction/scope of the business.

Set strategic goals and priorities for the RBM as a whole.

Define objectives for major projects.

Strategic objectives on organizational changes and competence related issues.

Use of resources – determine the level for the budget and the number of employees.

3. Action Plan

Attach action plan for the strategic objectives identified and the corresponding Key Result Areas.

3. The business plans

The RBM has established a template that is to be used at all management levels down to the departments. The objectives of the strategic action plan will be cascaded down to the business plans for the functional areas, and further down to the departmental business plans. Instead of having their own business plans, the divisions and sections will operate with a simpler action plan. The objectives in the action plans used for divisions and sections will be derived from the departmental business plan. The indicated status column could be used to present the status report for mid-year and year-end.

The RBM should aim at increasing the quality of the business plans. They should be less detailed, focus on major tasks only and develop more measurable targets. Workshops with the Executive Director and the department directors of the different functional areas may be considered as a part of the process of updating the business plans.

4. Pre-budget meeting of the senior management

If the RBM does not announce budget ceilings ahead of the planning process, the RBM must establish a mechanism for prioritization if the consolidated budget exceeds what is regarded as acceptable by the Governor. A pre-budget meeting of the senior management team may take place approximately 3 weeks after the strategy meeting. At this meeting, the AFD should present concrete estimates of the income situation, the major expenditures and the major projects and match the estimated budget outcome with what has been discussed and agreed at the strategy meeting.

The outcome of this meeting will be the budget manual. Generally, the budgeting guidelines should be as concrete as possible for each functional area. Examples of such guidelines could be ceilings on total budget expenditures, an overall ceiling on the number of permanent employees, or acceptance/rejection of plans to go ahead with a major project.

One aim is to establish a tentative staff target during 2010 for the number of jobs 3-5 years ahead. Before the planning process for the 2011 budget, the AFD should consider introducing a budget ceiling on so-called “controllable expenditures” based on the number of jobs 3-5 years ahead for each of the functional areas and for the RBM as a whole. The annual budget process could then focus mainly on major investments and new projects and thus, avoid starting from zero each year. Other major components of the budget may be categorized as “financing and income outside the control of the RBM” and as “non-controllable expenditures”.

5. Monitoring activities and progress reports

The top level management will have regular as well as ad-hoc meetings throughout the year with the Executive Directors, and occasionally also with the department directors as an integral part of the RBM’s monitoring framework. In order to discuss and coordinate the views and positions of the top management, the Governor, the Deputy Governor and the General Manager will also have their own meetings. The table below illustrates a possible structure for the top level management’s meetings with the Executive Directors and the department directors.

Frequency	Participants	Meeting/Subject
Quarterly	The Board of Directors	Regular meetings
Monthly	The senior management meetings	Regular meetings. Current administrative and policy issues, papers to the Board of Directors, review of various corporate performance reports, plans, budget, etc.
Semi-annual, Q1 and Q3	Deputy Governor / General Manager, and their respective EDs	Bilateral performance assessment according to the performance contract
Semi-annual Q2 and Q4	Deputy Governor / General Manager and their respective EDs	Bilateral follow-up of functional areas progress according to their respective Strategic Plan, business plans and use of resources/budget
Monthly (or every second week)	Deputy Governor / General Manager and their respective EDs	Bilateral meeting; e.g. briefing, giving directions, planning, discussions on current operational issues
2 – 4 times a year	Senior management and department directors	Joint meeting with all directors of the RBM
Ad-hoc	Dependent on the issue; Gov./Dep.Gov./GM, EDs, and/or Directors	Meetings on policy issues when needed
Ad-hoc	The management team of the functional area	Gov./Dep. Gov./General Manager may occasionally attend the ED’s regular meeting with their department directors

The SRD has the overall responsibility for the reporting processes. In cooperation with the AFD and the HRID, the SRD is responsible for submitting the guidelines to the senior management. In December, the guidelines should describe the year-end reporting procedures and requirements for the management appraisals. In June, guidelines for the planning procedures including the requirements for the semi-annual report should be issued.

The table below illustrates a possible reporting calendar:

Deadline	Activity	Responsible
Early Dec.	Circulate integrated guidelines for year-end progress reports; guidelines to senior management and department directors: requirements for the year-end report guidelines for appraisals	SRD (in cooperation with AFD and HRID)
End-Jan.	Risk Management Committee submits the consolidated risk evaluation report for the second half year to senior management.	SRD
Mid-Feb.	As requested by SRD, the year-end report from the Exec. Dir	Governor/ Dep. Gov./ GM and the Executive Directors
Mid-March	SRD coordinates and prepares a joint progress report to be forwarded to the Senior Management: progress report on the Strategic Plan consolidated risk evaluation report for the first half year consolidated progress report on business plans and budgets - consolidated management reports on the budgets	Governor/ Board of Directors
Early July	Circulate integrated guidelines for semi-annual progress report, guidelines to the Senior Management and the department directors.	SRD/AFD
Mid-August	SRD coordinates and prepares a joint progress report to be forwarded to the Senior Management for the first half year. Same as for year-end report, but should include a budget forecast.	Governor/ Board of Directors
End-Month	AFD produces management reports on the budgets/accounts to the Governor, Deputy Governor and General Manager.	AFD
End-Quarter	AFD produces management reports on the budgets/accounts to the Senior Management.	AFD
End-March and End-Sept.	Appraisal interviews.	HRID facilitates

The SRD prepares semi-annual risk assessment reports to the Board of Directors. The report should be discussed by the Risk Management Committee and presented to the Board of Directors through the Senior Management (and the Board Audit Committee). The report should highlight key changes in major risk issues during the last period. These could be new or escalated high/critical risks, control weaknesses and/or status of any actions taken to further mitigate the risks. It should also report on progress of key improvement initiatives identified in the annual business plan.

The Executive Directors shall submit reports to the SRD for consolidation by end-January, respectively end-July each year. The report should include:

- Progress in relation to the business plans for the functional area:
- Goal achievements in relation to the current business plans and strategic action plan
- Status on major projects
- The use of the budget for the functional area as a whole:
- Main consolidated figures for the functional area
- Significant deviations should be addressed/clarified
- An updated risk assessment with related control activities for the functional area as a whole
- In July, the report should include a budget forecast for the rest of the year.

The SRD should assist and advise the functional areas/departments where questions related to the reporting exercise occur. In order to make this effective, it is imperative that there is strong commitment from the Senior Management. They should signal to the functional areas that all departments are required to follow up and participate, and reply according to the set deadline.

The main end-year report to be forwarded to the Board of Directors through the senior management should include:

- performance report on the Strategic Action Plan
- consolidated risk evaluation report
- consolidated progress report on business plans and budgets
- consolidated management reports on the budgets

The SRD should, in cooperation with the AFD, prepare a summary of the progress report for the senior management. The report should be forwarded to the Senior Management through the Executive Director, Support Services and further to the Board of Directors. In the RBM, this report is also channeled to the Board Audit Committee meeting through the Senior Management. The report should aim at linking the accounting figures to the strategy/business plan performance of the RBM. The AFD prepares the figures which are to be included in the main report. Moreover, the AFD continues to prepare the regular report on the financial accounts and the utilization of the budget. This report should be attached to the overall consolidated performance report.

The SRD prepares the risk management report for discussion by the Risk Committee, after which it is forwarded through the Executive Director, Support Services to the senior management, and subsequently to the Board of Directors.

When preparing the main end-year report, some other reports will also have to be taken into consideration, such as a project report from the Information and Communication Technology Department (ICTD), a report from the HRID on the pension fund and a report on insurance-related issues submitted by the Administration Department.

The steps described above will also apply for the mid-year report to be prepared by end-July. With regard to the mid-year report, the functional areas should be asked to include a budget forecast, estimating the use of the budget by end-year. The AFD should then prepare the overall end-year forecast for the RBM as a whole.

V. The RBM's organization review of the fall of 2008

In April 2008, the Governor of the RBM asked Norges Bank to undertake an organizational review under the current technical cooperation program. In view of the observations and recommendations pertaining to organizational issues that had been made in connection with the various technical cooperation projects, and the fact that the RBM had experienced some lapses and challenges after the implementation of the new corporate structure in 2006, the RBM considered it necessary to undertake another organization review. According to the Terms of Reference for the project, the main issues to be addressed were the following:

- 1) Review the current corporate and departmental structures in order to clearly define an efficient organizational structure as well as responsibilities and accountability for every established job.
- 2) Establish an appropriate organizational structure, number of jobs and total staff needed 3-5 years ahead.
- 3) Review the current job grading instrument and make recommendations for an appropriate grading instrument for the Bank.
- 4) Review career paths and progression plans in the RBM in connection with the remuneration policy and the pay structure.

The RBM established a Steering Committee headed by the Governor, a Technical Committee, headed by the Director of the HRID and a Grading Committee, headed by the Executive Director of Economic Services. As part of this organizational review, a study tour was conducted to the Central Bank of Swaziland (CBS), the Bank of Tanzania (BoT) and the Bank of Zambia (BoZ) prior to the second project visit. The main objective was to gather information from the other central banks in the areas of organizational structures, staff establishment (staff budget ceiling) and complement (current staff), job evaluation and grading systems as well as pay structures and career/progression plans.

In addition to reviewing the RBM's organizational structure as addressed in the previous chapters, the review also looked into staffing, job grading systems, pay structure policy and career pathing. Many of the findings and recommendations in the RBM Organization Review would have cost consequences, but estimates of the RBM's actual cost savings as well as extra expenditures were not addressed in this project.

1. The organization of the RBM

Even though the organization and management structure of the RBM after the alterations in the corporate structure on July 1, 2008 largely coincided with what could be considered as best practice in central banks, some further changes in the RBM's organizational structure were presented for consideration.

1.1. Responsibility of the MITASS. Establishment of a Payment Systems Department

In principle, the responsibility for the operations of the Perago RTGS System, which has been renamed Malawi Interbank Transfer and Settlement System (MITASS), should be administratively separated from the oversight function. This might be achieved by transferring the responsibility of the MITASS from the Payment Systems Division (PSD) in the BPSD to one of the banking divisions.

As a result, the PSD's role and functions would be confined to responsibility for oversight and policy issues, including the future national and regional payment systems reform processes. Given the PSD's responsibility for one of the RBM's core policy functions, it was recommended that the division should be established as a separate department, either in Economic Services or in Supervision.

1.2. Functional areas and respective departments

The Administration Department and the ICTD were located in the functional area of Corporate Services. Both departments are supporting the rest of the organization, and it would be closer to best practice if they were moved to Support Services. Transferring both the Administration Department and the ICTD would imply that the Executive Director for Support Services would have a wide control span. With the move of the new Banking Department to Corporate Services, the Executive Director for Corporate Services would be responsible for only two departments. Given the close links and interactions between the ICTD and the Banking Department, it was recommended that only the Administration Department was moved to the Support Services.

1.3. Splitting Currency Management and Protective Services Department

The Currency Management and Protective Services Department (CPSD) has two very different functions. Organizing these functions in one department was inspired by some other central banks, particularly the Reserve Bank of South Africa. The main reason appears to be that the Currency Management Division is a main user of the services provided by the Protective Services Division. Having both functions in the same department makes it possible for both sections to obtain insight into each other's operations. Since this might not be desirable, the two

divisions would have to operate independently of each other, which would imply that the two divisions did not function as an integrated department. As a result, it was recommended that the department should be split into two different departments.

The new Currency Management Department could remain part of the Corporate Services, while the Protective Services could be transferred to the Support Services. The Protective Services could be included in the Administration Department, resulting in a department with a wide range of tasks and more than 200 employees. All in all, it was recommended that the Protective Services should be established as a separate department in the Support Services.

1.4. Responsibility for the RBM's Pension Fund

The HRID is responsible for the management and accounting of the RBM's Pension Fund, which require competence outside the normal tasks of a human resources department. Given the RBM's monetary and foreign exchange policy role, and since the RBM is a major participant in the financial markets with interest rate setting, conflicts of interest may arise. Hence, when deciding on the organization of the management of the Pension Fund, due consideration must be given to the risk that the management of the fund could conflict with the RBM's monetary policy tasks.

The process mapping exercise undertaken by the RBM showed that the management of the Pension Fund had many similarities with the activities of the Treasury Department. However, moving the responsibility to Treasury Department would lead to even larger conflicts of interest. The RBM is considering establishing the Pension Fund as a separate entity with external trustees. Such an organization is awaiting enactment of the Retirement Bill and is likely to eliminate the conflict of interest. It will, however, require satisfactory competence in fund management issues.

2. How to make the organization more efficient

2.1. Flat versus hierarchical structure

Organizational structures may be flat or hierarchical, and the choice of model may have consequences for how efficient the organization operates. In general, hierarchical structures seem to work best for organizations with military or industrial tasks. Flat structures seem to function best in knowledge-based activities. Therefore, the needs of the RBM may vary between departments.

For well-educated staff members, it is motivating to follow reports and recommendations as they are passed up to the senior management level. This also provides valuable feedback concerning the quality of their work. Work processes allowing for such involvement and feedback are easier to implement in structures with short reporting lines.

Creating working teams with a limited number of staff reporting to the same supervisor strengthens the possibility for improving the analytical quality and the capacity for solving problems. It also makes it easier to have somewhat overlapping responsibility and competence.

This will make the organization less vulnerable to staff leaving or staff absence for shorter and longer periods. Different tasks and skills among staff members will set some limitations to how far such team work may be developed. However, specialized staff may often qualify for different and more advanced tasks than they could carry out in the first years of their career, while more experienced staff members with higher education might prove to be less successful than expected in developing further. This provides scope – and benefits – for overlapping responsibilities.

It was therefore recommended that each department in the RBM should be asked to evaluate how the department is organized, and to consider a revised internal structure where more emphasis is assigned to clear lines of responsibility and a reduced number of layers in the reporting lines. Based on these recommendations, the Executive Directors should in consultation with the respective directors and staff decide on the department's organizational structure and reporting lines.

2.2. Delegation principles and performance management system

A new governance structure and the more clearly defined roles of the Senior Management should strengthen the RBM's efficiency and accountability. So far, the RBM's organization and management has been based on well-developed direct control of ongoing activities. This may have been necessary to ensure that decisions were in line with the RBM's main strategies and the views of the Senior Management. However, there is always a trade-off between control and efficiency. Control systems that are very comprehensive will lead to reports and advise on decisions that have been considered at many levels within the organization.

An issue which is raised to a higher level than necessary will create extra work. With efficient use of the RBM's management performance system, a move towards a system with more indirect control of the activities appears feasible. Such a change will have to be made gradually, pending review of how well the performance management system functions. Combined with tight budgets and other meaningful limitations on the activity, this should facilitate more use of indirect control systems and more delegation of the decision-making, and thereby increase the efficiency in the organization. It is important that managers at all levels, in addition to being measured according to the quality of the products they deliver, are also measured on their ability to reduce the cost level and the staffing of the organization.

All central banks face a situation where new technology makes it possible to perform new tasks at lower cost and with less staffing. Thus, the management should have the right incentives to initiate new automation processes. Before investing in new technology, the profitability of the investment should be properly investigated. Use of new technology may also require skills that are lacking in the organization. It is therefore important to assure that necessary skills are in place before replacing manual routines with automated ones.

VI. Staffing performance evaluation and remuneration

1. Staffing

In general, the RBM should aim at being a slim central bank with the number of staff not exceeding what is considered best practice among central banks in the Southern African region. In Europe, slim central banks will often have between 300 and 400 employees. The responsibility for supervision often lies outside the central bank. Many functions that are automated in the European central banks are done manually in the African central banks, partly due to lower salary levels and costly automated systems. Altogether, one would expect that the staffing levels would be somewhat higher in the African central banks than in the European central banks.

In most central banks of developing countries, the share of support staff is higher and the share of core policy staff lower than in central banks in advanced economies. While the share of support staff appears to fluctuate between 30-50 percent for central banks in advanced economies, it is about 60 percent for the RBM. This divergence may be partly warranted by different wage and cost structures, and it may be more meaningful to compare the RBM's staffing with other central banks in the region. Nevertheless, in a medium-term perspective there is scope for reduction of the RBM's support staff.

In the project, the main tasks and the staffing level of each department were reviewed. The staffing levels were compared with the corresponding levels in the Bank of Zambia (BoZ), taking into consideration that the organization of the two central banks is slightly different. While assessing the extent to which the respective departments' staffing appears to be on the high side, on the low side or broadly appropriate, the RBM also performed a detailed process mapping exercise of all departments with evaluation of responsibilities and accountability for every established job. In combination, the two exercises should provide guidance on the number of jobs and total staff needed at the RBM.

Based on the review of the individual departments, with the present structure for organization of the different departments, present staffing levels (staff complement) appeared to be on the high side, low side, or broadly appropriate in the following departments/areas:

- High side: Currency Management, Protective Services, Administration
- Low side: Information Communication and Technology, Bank Supervision, Non-Bank Supervision, Research and Statistics, Payment Systems
- Broadly appropriate: Human Resources (too generous staff services?), Strategy and Risk, Accounting and Finance, Treasury, Exchange Control and Debt Management, Banking, Bank Secretary (excl. coordination of reports), Internal Audit

In recent years, the RBM has undergone a substantial reduction in staff. This is partly due to outsourcing, and the RBM has already outsourced some activities that do not require very high skills. In order to evaluate the pros and cons for outsourcing, two main criteria seem particularly relevant; the quality of the provided services and the cost level, where the need for management capacity is included. The potential for gains could be significant when it comes to the number

of staff. Even so, net cost gains could be small or non-existent. Considering the costs, it is also important to take into account that outsourcing reduces the need for management capacity. In accordance with the Terms of Reference, the main focus was on the issue of staffing, even though many of the recommendations in this report will have cost consequences. Estimates of the RBM's actual cost savings as well as extra expenditures were not presented in the project report.

Outsourcing may provide more flexibility when the competence necessary to perform a task is changing, or one person is absent. Usually, it is easier to have services delivered from another firm than to replace some employees with others. On the other hand, the loyalty and punctuality towards the RBM may be weakened if the jobs are done by people working in other firms.

The highest potential for outsourcing is in the Administration Department and in the Currency and Protective Services Department. Before considering further outsourcing, the RBM should undertake an evaluation of whether previous outsourcing has led to efficiency gains and cost savings. The decision criteria should be net costs, after the need for management capacity is taken into account, and provided service levels.

As the RBM moves in the direction of flatter organizational structures in the individual departments and more automation and outsourcing of services, there is a further potential for staff reductions. It was recommended that the RBM set an indicative staff target for a medium-term perspective (3-5 years) and a long-term perspective (7-10 years). The target should be based on best practice benchmarking in the Southern African region, evaluation of possible automation and rationalization, and the scope for further outsourcing.

2. Grading

2.1. The grading system

A large number of job grading systems have been commercially developed and are available in the market. These include some internationally developed and applied systems such as the Hay Job Evaluation system and Mercer's International Position Evaluation ("IPE") as well as some local South African/African systems.

The RBM's Bespoke job grading system is a classic points factor system based on the principle of grading a job by allocating scores to a range of factors based on certain definitions. In discussions with various officials of the RBM it became clear that, due to the current short-term requirements for the commencement of job grading, restructuring the Bespoke system in order to provide for a job grading solution in the short term was preferred. Further to this, there was a view that there might be a need to consider adopting one of the existing job grading systems in the longer term. A future approach will be considered based on the success of the restructured in-house system.

The RBM has recently established a Task Force on Job Evaluation and Pay Structure. This Task Force was provided with a Terms of Reference to, inter alia, review the Bespoke evaluation

system with a view to “modernizing and refining it, based on other ranges of systems and factors”. During a workshop with the Task Force, consideration was given to various options and approaches in this regard. The outcome of these discussions was a recommendation to reduce the job grading factors in the Bespoke system from the following 15 factors:

Knowledge, Practical Skills, Decision Making, Analytical and Judgmental Skills, Responsibility for Financial and Physical Resources, Responsibility for Human Resources, Consequence of Error, Variety and Complexity of Tasks, Working Conditions, Personal Risk, Organizational Contacts, Confidentiality, Mental Effort, Planning and Organizational Skills, Responsibilities for Information Resources

to the following 4 factors:

- Knowledge, Decision Making, Analysis and Problem Solving, Variety and Complexity of Tasks

Consideration was also given to the weighting of the various factors and it was recommended that “Decision Making” should have a higher weighting than the other factors due to the fact that it is a direct indicator of a position’s influence and impact within an organization. Furthermore, experience from other job grading systems indicates that it is generally best practice for this factor (or variations of it) to have a high weighting.

The proposed system is based on a restructuring of the pay system to an 8-level pay grade system ranging from the position of Executive Director (historically E Lower) to the most junior positions in the Bank. This was aligned with the recommended restructuring of the pay scales.

2.2. The job evaluation procedure

In many instances the failure of a job grading system is not due to the shortcomings of the actual grading instrument, but rather the overall job evaluation process and procedure within which it operates. The existence of a well structured procedure that is strictly followed lends credibility to the overall process. Outlined below is an overview of the various aspects of such a procedure with recommended approaches based on discussions with the RBM.

Organizational and work design

The most successful organizations are those that are able to adapt to continually changing circumstances. The need for change is brought about by developments in the environment inclusive of technological and economic developments. In this changing world it is necessary for organizations to constantly review their structures in order to ensure that they remain relevant to the evolving organizational strategies.

The introduction of structural changes in an organization impact directly on the overall job evaluation procedure in that roles have to be properly redesigned to support such structures. These roles need to be written up in job descriptions that form the basis of a number of human resources processes, including job grading and remuneration.

Job descriptions

The compilation of good job descriptions provides an important basis for a range of human resource processes such as recruitment, induction, training, performance management as well as job grading and remuneration management.

A job description needs to contain an accurate and current listing of what is expected of the incumbent, together with details of hierarchical and reporting relationships. It should also provide information with regard to the minimum qualifications and experience that an incumbent should have in the position.

Submission of jobs for grading

The job evaluation procedure should clearly outline the process by which jobs will be submitted for grading. In normal circumstances, when an organization has an existing and well established grading and pay structure, jobs should only be submitted for grading if significant changes have taken place in the content of such positions. This is normally brought about by technological or organizational changes resulting in changes to current jobs, or the creation of new jobs.

However, when a new job grading system is implemented it is necessary for a special grading exercise to be conducted. Such a special grading exercise was conducted at the time the Bespoke system was implemented.

The Grading Committee

The grading of jobs is decided by the Grading Committee. A decision has been made to reduce the size of the committee to 5 members. The Chairperson will be one of the Executive Directors. In addition, there should be 2 representatives from Management and 2 Staff representatives. In addition, the HRID will attend meetings as the secretariat of the process.

The committee should not take decisions by vote, but rather through consensus after a proper debate. In any instance, where there is disagreement on a score for a particular factor, the Chairperson should have the final say in determining a score. Committee members should agree on a protocol of jointly supporting all grading outcomes, regardless of differences of opinion that may have arisen during grading discussions.

A job evaluation procedure should incorporate a process for the validation of grading outcomes as well as for dealing with complaints or appeals. A validation panel should be established for this. The validation panel should consider the recommendations of the grading committee in light of the total organization and should address questions regarding the relativity of jobs in the organization. The validation panel should not have the power to grade or regrade any jobs, but may refer jobs back to the grading committee with specific requests regarding issues that need to be considered. (e.g. cross departmental grading issues or the quality of job descriptions, etc.)

Upon submission of the grading committee recommendations for consideration by the validation panel, the HRID should also advise the incumbents of the particular jobs of the recommended

grades. Such individuals should be afforded the opportunity to make written submissions for consideration by the validation panel on any issues that are considered relevant. This shall constitute an appeal process.

3. Remuneration management

A large number of levels do not provide much scope for persons to progress through the respective pay ranges. A reduction to 8 levels appears justifiable and practical. This does not add any costs to the organization due to the fact that all current salaries would remain within the new ranges.

In order to achieve a better profile regarding range widths and overlaps as well as a smoother slope, it would have been desirable to develop a pay scale with a broader range width. Although increased maximum ranges would not result in an immediate increase in employment costs due to the fact that the collapsed minima are the same as the current scales, it builds in an underlying wage drift and inflationary bias. Thus, it was recommended that a broader range (e.g., 0.40-0.70) and a smoother wage progression profile were achieved by decreasing some minimums and moderately increasing some of the maximum ranges of the pay scales.

4. Performance management

The BSc framework has been in use for performance management purposes since 2005. Individual performance contracts were set up based on corporate and departmental scorecards. However, individual performance contracts were not updated in accordance with the current Strategic Plan and the departmental business plans.

The BSc approach is now used for formulating the RBM's Strategic Plan, the business plans and the individual performance contracts for supervisors and above. This ensures alignment of individual and departmental objectives, and that assessments are aligned to the corporate strategy. The templates for the above mentioned plans and contract have recently been adjusted and actual performance contracts for all positions within the RBM have been updated accordingly.

The performance objectives for directors, managers and supervisors are mainly based on the major objectives from their respective business plans and action plans, and to some extent also from the job descriptions. The revised template includes a section on leadership competencies which will provide a basis for evaluating all directors, managers and supervisors. For the positions of officers and below, the BSc perspectives will be replaced by a list of Key Result Areas (KRA). The business plans and action plans for the respective unit will then provide the basis for formulating the KRAs in the contract, including competency requirements. Guidelines for the appraisal procedures have been updated accordingly, and appraisals now take place twice a year.

5. Career path and progression plans

In certain specialist and professional occupations, there are little or no opportunities for promotion up the normal career ladder. For such occupations, it is necessary to develop a pay progression policy that will provide for meaningful salary increases within the respective pay ranges during the career of such an individual. This would typically be applicable in job families where the level of competence of the experienced employee may be much higher than that of an entry level employee, although the basic job requirements (as per job grading) remain the same.

A possible two-way career path could be presented as follows:

Management	Professional/specialists
Director Manager (Principal Economist) Supervisor (Economist)	Senior Advisor Advisor
Senior analyst Officer/Analyst Clerk Assistant	

Although the level of competence of an individual is not only a factor of years of experience, there does tend to be a high correlation between the two. It is believed that a pay progression model based on a combination of years of experience and competence should be considered as follows:

- A list of applicable job titles is to be compiled and approved at the executive level. These must be jobs that meet the criteria as referred to above, i.e. typically high level specialists or professionals who would not normally have a career path in the classic hierarchy of the RBM.
- For each job a competence profile is to be developed for each of the following 4 levels of competence:
 - Entry level/Inexperienced: Although minimum entry requirements have been met, competence has not been demonstrated in most areas of the job.
 - Basic competence at the level of +- 5 years experience: Has achieved basic level of competence in most areas of the job.
 - Advanced level of competence +- 10 years of experience: Is fully competent in all aspects of the job and is exceeding requirements in some aspects.
 - Superior level of competence +- 15 years of experience; Superior competence and performance is exhibited in all areas of the job.
- A consistent approach needs to be developed across all functions in order to ensure that the assessment of competence against the required levels is clearly provided for. This should be a joint process between the relevant Heads of Department and HRID.

- Based on the proper introduction of the abovementioned assessment process, the remuneration of individuals should be pitched as follows in the respective pay ranges:
 - Entry level/Inexperienced: Appointment at minimum of the scale.
 - Basic competence at the level of +- 5 years experience: Remuneration at the 25th percentile of the range.
 - Advanced level of competence +- 10 years of experience: Remuneration at the 50th percentile of the range.
 - Superior level of competence +- 15 years of experience: Remuneration at 75th percentile of the range
- In addition to the abovementioned, the general pay progression rules outlined in the previous section above should also apply to these selected occupations.

As indicated, the introduction of the proposed broad pay ranges will not result in any increased costs to the RBM. However, the recommendations for future pay scale progression for both general as well as specialists/professionals could result in additional future costs, if not well managed. If these policies were to be adopted, there would need to be a change in the way that general annual salary adjustments are made.

It is understood that the general annual salary adjustments for the last few years have been +- 2 percentage points above inflation. In order to provide funding for a pay progression policy, the future general increases will need to be reduced by approximately 3%. (The actual figure will need to be carefully calculated based on the Bank's specific circumstances)

It is believed that this will be justified based on the fact that the recent market benchmarking information indicated that the RBM's remuneration is well aligned with the market. In addition, the higher performers will be able to improve on the basic increase due to the new pay progression policy.

Chapter IV

Automation of the Transaction and the Accounting System

Chris Ford¹⁸ and Steinar Selnes^{19 20 21}

I. Background

Like many other central banks, the RBM has experienced a major challenge relating to the largely manual routines involved in transaction processing and in the accounting area. All reconciliation between the General Ledger and the various other systems has been done manually, and each trade and payment has to be manually inputted into several systems. Moreover, the manual accounting routines involve a lot of human intervention at the same time as the operations are becoming more complex with increased transaction volume. The scope for automation of the transaction and accounting systems of the RBM was therefore an issue during the project on Accounting, Risk Management and Internal Audit in November 2006.

In view of the recommendations of the November 2006 project, the RBM's Board of Directors approved a project to integrate the various modules of the accounting system. The RBM established a working group to carry out a pre-study, and to evaluate the alternatives for getting in place more straight-through processing. The mandate was to work out the best approach going forward, taking into consideration costs and technological requirements. One outcome would be to facilitate improvement and automation of the existing system; another outcome would be to establish the functional requirements for a new "off the shelf" transaction system.

The main purpose of the project visit in June 2008 was to provide an evaluation of the work necessary to achieve current best practice, utilizing the existing software available to the RBM to enhance automated interface capacity between the primary general ledger and the sub-systems. In addition, the degree of compliance of the RBM's Annual Financial Statements with the International Financial Reporting Standards (IFRS) was also reviewed.

A strategic decision to replace the somewhat dated MIDAS general ledger system was recommended in the June 2008 project report. Because of the time required for the implementation of such a project, an intermediate strategy for a limited enhancement of existing accounting and related information systems was drawn up. After considering alternative development strategies, the strategic decision to replace MIDAS was taken at the RBM's Strategy Meeting in late

¹⁸ Chris Ford was MCM/IMF short-term expert, and was formerly Head of Financial Administration at the Reserve Bank of Australia.

¹⁹ Steinar Selnes was MCM/IMF short-term expert, and is Senior Advisor, Control and Compliance Department, Norges Bank Investment Management.

²⁰ Bernhard Thompson participated as MCM/IMF short-term expert in the June 2008 project. The article is partly based on the Aide-Mémoire issued in connection with this project visit.

²¹ We wish to thank Robin Darbyshire, MCM expert, Director Charity Mseka and staff of the AFD, and Director Donnex Chitsonga and staff of the ICTD for helpful comments.

August 2008. A project team was established, and a comprehensive Request for Proposal document (RFP) was worked out in the first part of 2009. The main objective of the project visit in June 2009 was therefore to review the RFP and assist the RBM in drawing up a concrete project plan for replacing its current accounting system, MIDAS, with a system that provided scope for future development and could provide for automatic interfaces with the RBM's legacy accounting infrastructure.

The RBM has followed a step-by-step approach in the implementation of the plans for automation of the accounting system and the interfacing of the different systems involved in the trading and settlement process. The transaction and accounting system issues addressed during the various project phases are outlined in this article. The completion date for the new and more automated accounting system is tentatively estimated to around mid-2011.

II. The system architecture at the RBM

The RBM utilizes the following core MIDAS general ledger and associated information systems:

1. MIDAS system (Core General Ledger)

The RBM has used the MIDAS (core general ledger) system for about twenty years, and there have been several upgrades to meet the RBM's demands during that time. As with any general ledger package, the MIDAS system has widespread application across the central bank. However, key personnel have left Misys, the MIDAS software support firm, and the RBM has been increasingly concerned about the systems support. Small projects which have required technical assistance and training to become operational, such as the SWIFT/MIDAS interface and a securities module, have stalled due to a lack of Misys consultants who can provide the necessary technical consultancy and advice.

The Accounting and Finance Department (AFD), in collaboration with the Information and Communication Technology Department (ICTD), has developed an in-house payroll and personnel system. This is a very flexible system which allows staff to access personal details such as salary, loan entitlements, and leave days via the RBM intranet. In addition to facilitating the work load of the Salaries Office, the system assists staff in managing their personal finances.

For several years, the RBM has been attempting to automate fixed asset management recordkeeping. An external Sage application package was acquired for this purpose, but was abandoned due to a number of software supplier issues, such as field size for asset cost amounts. In addition, the Sage supplier, Global Computer Systems Ltd, advised that the system developers had closed the operations. An alternative replacement software package (EBA) was offered, but the RBM has decided to look at other in-house and supplier options before making a further commitment.

2. SWIFT system

The SWIFTNET migration project has enabled the RBM to upgrade this system to a more secure platform, which enables users to channel all communications through the one connection, thereby reducing operational costs. The Relationship Management Application (RMA) has been implemented on SWIFT and replaces the Bilateral Key Exchange (BKE). To maximize functionality, a SWIFT/MIDAS interface was prepared by the Misys software support company. However, the necessary training was not provided to relevant RBM staff, and this project has stalled. Similarly, an installed MIDAS securities module has been awaiting consultants' technical support and training and is therefore not yet operational.

3. Book Entry system

The RBM currently uses the Book Entry system for processing security transactions and is committed to developing a new and more flexible system with enhanced stability and security features. The new system would be linked to an electronic bidding system to enhance functionality. A prototype has been developed and is being tested.

4. CRISP/RTGS system

A further interface project covers MIDAS/RTGS linkage. The project is being spearheaded by the Banking and Payment System Department (BPSD), which has ownership of this system. Some initial problems have been referred to the external software supplier for rectification. The CRISP/RTGS interface has been implemented and is operational. The CRISP/RTGS system is used by the AFD, the Currency Management Department, the BPSD, and the Human Resources and Institutional Development Department (HRID).

5. Other sub-systems

A number of other applications and modules are fully or partially in operation in the RBM, including INTELLMATCH (a reconciliation package), SYBRIN (electronic cheque clearing), a Budget Monitoring System, STAFFWARE (Treasury Bill certificate printing) and CITIBANKING (printing of bank drafts, and an electronic banking facility with Citibank).

III. Enhancement of existing accounting and related information systems

While the RBM had successfully completed a number of major software implementation projects and upgrades (e.g. SWIFT, Reuters and RTGS), some of the projects to reduce reliance on manual/spreadsheet recordkeeping and reconciliation processes have stalled or been subject to delays. Contributing factors have been insufficient ICTD resources, the lack of clear prioritization of projects, and inadequate monitoring and follow-up of project delays. Insufficient software supplier cooperation also appeared to have been a delaying factor in the MIDAS accounting system enhancements. In particular, it appeared that a significant number of the software supplier's key MIDAS experts have resigned. All in all, there had been a large backlog

of software development work in a number of system areas, and significant slippages were registered in the various departmental business plan completion date estimates.

An approach for improvement of the project implementation is presented in Appendix 1. This encompasses critical success factors in terms of best international practice, including the use of full-time project team(s) to avoid day-to-day operational requirements that impede the work, and the use of a steering committee approach to monitor the enhancements and report progress to the RBM's Senior Management. The steps necessary to replace existing software were also reviewed in the June 2008 project, with specific reference to the core MIDAS general ledger, which is based on a platform incompatible with many of the RBM's other systems.

Compared with a decision to remain with MIDAS in the longer term, a strategic decision to replace the existing MIDAS general ledger system would have an impact on the number of outstanding enhancements that were still considered necessary. In the June 2008 report, it was pointed out that the somewhat dated MIDAS software should be considered for replacement at that time, given lead times to select and implement major new software systems. The five-year ongoing MIDAS license agreement was renewed in 2007 with the relevant software supplier, following an earlier ten-year commitment.

A MIDAS core general ledger replacement decision would likely lead to a deferral of some of the proposed enhancements to existing software, and redirection of resources to the new project. In view of this, the initial priority would be to automate as far as practicable the various interfaces between the stand-alone modules and MIDAS, and maximize the efficiency and functionality of the existing systems. Critical factors for successful implementation of enhancements would be:

- Evaluation of appropriate short-term enhancements should the strategic decision to replace MIDAS be taken;
- Adequate internal ICTD and end-user full-time project resources, as well as external supplier support;
- Clear end-user specifications prior to project commencement;
- Full-time Project Team implementation, with individually responsible Project Managers reporting regularly to relevant Department Heads, and then the Information Technology Steering Committee;
- Information Technology Steering Committee's prompt follow-up of any bottlenecks/delays, and reallocation of resources as necessary.

Furthermore, it was suggested that the RBM should introduce a more rigorous spreadsheet approach to identifying work to be done. During the project visit, work was undertaken to identify the scope for enhancements to be done, such as:

- the extent of automation required
- the external (software supplier) and internal (AFD/ICTD) resources required (including any other areas of the RBM to be involved in a particular enhancement);
- the proposed refinements and likely timing and prioritization.

Appendix 2 shows an example of such spreadsheet priority work. The table presents a list of software enhancements prepared during the June 2008 project visit in cooperation with the AFD, and identifies the proposed refinements and likely timing and prioritization. The AFD would need to further liaise with the ICTD to determine whether timing and priority rankings included in this spreadsheet approach are realistic, and whether any appropriate agreed revisions are made. Such an approach, approved at least at the Information Technology Steering Committee level, may be the basis upon which agreed enhancement work could recommence and continue. There would also be a need for frequent monitoring, e.g. quarterly, with reports to the Committee to ensure that any slippages are addressed promptly. Recently, the role of the ICT Steering Committee has been reactivated, and the prioritization of projects will now go through the ICT Steering Committee at the beginning of each year.

IV. Replacement of the MIDAS general ledger system – automation of the accounting system

Following the strategic decision at the RBM's Strategy Meeting in late August 2008 to replace MIDAS, the RBM established a project team, which conducted several meetings to define the project and develop a Request for Proposal (RFP). In late July/early August 2009, a project visit was conducted to provide technical assistance to the RBM to review the RFP and to draw a concrete plan for replacing MIDAS with a system that provided scope for future development and could provide for automatic interfaces with the RBM's legacy accounting infrastructure.

According to the RBM's present plan for replacing MIDAS, a tender for a new accounting system should be completed and the contract awarded by end-May 2010. The hardware installation is expected to go live in early October 2010, and the software solution implemented by early May 2011. A post-implementation review is scheduled for end-2011. In order to provide the RBM with technical assistance during the project implementation, 1-2 additional project visits are scheduled to be conducted in the course of 2010 – first half of 2011.

1. Strategy for future accounting and related information systems development

The strategy for acquisition and implementation of new accounting software will require a number of additional considerations over and above those raised in connection with system enhancements. The following additional critical success factors were therefore highlighted in the June 2008 report:

- Clear specifications of user requirements. Review of existing accounting systems requirements (e.g. including those developed for the MIDAS enhancements) to fully accommodate best practice requirements in IFRS related financial accounting, management information systems reporting (budgeting, costing etc.), as well as any statistical reporting requirements (e.g. IMF reporting, monetary policy forecasting).
- The extent of interfaces with other existing (or any planned replacement) software, and which parties will be responsible for such enhancements (i.e. clarification of supplier and central bank roles).

- The RBM's tender process is in accordance with the statutory requirements of Malawi's Public Procurement Act. The procurements within the RBM are administered by the Administration Department and by two committees; the Internal Procurement Committee²² and the Technical Evaluation Committee²³ (the AFD is a member of both committees). The AFD and the ICTD will play a prominent role in the entire tender and procurement process for new accounting systems. In this context, the RBM could consider establishing a separate Tender Selection Committee for oversight of initial specifications development and initial tender firm list identification.
- As part of the tender process, the selection of an appropriate full-time project implementation team (RBM members and the software supplier team would need to be clearly specified, as well as their roles and responsibilities).
- Some central banks have involved international consultants in this overall process. This can be an expensive option and will depend to some extent on the RBM's own existing experience base.
- Incorporation of success factors listed for accounting software system enhancement.

2. Request for Proposal and tender evaluation.

The RBM's project team developed a very comprehensive RFP document in the first half of 2009. During the project visit in July/August 2009, the document was discussed in detail with the RBM at a number of working sessions at which changes were proposed. Following the discussions, changes have been made in the content of the document.

Websites where such RFPs' are normally published are as follows;

Development Gateway	www.dgmarket.com
Devex	www.devex.com
UN Development Business	www.devbusiness.com

In the July/August 2009 project report, the following key changes to the RFP were recommended:

- a) The RFP envisaged two core systems, each with a general ledger. It was pointed out that this is not a workable solution because a business should only have one core financial system and general ledger, with any number of systems around it which would contain subsidiary ledger systems.

The responses to the RFP document are likely to be:

- Financial managements systems with business modules around the core system, and
- Specialist Banking Systems.

²² Chaired by the Director of the Currency Management Department and with the Director of the Treasury Department as the Deputy Chairperson. Other members are the Director of the AFD, the Director of the Administration Department and a specialist on procurement from the Administration Department.

²³ Chaired by the Manager of the Procurement Section within the Administration Department, and has members from the AFD, the General Counsel and Bank Secretary Department, and representatives from the department procuring the service/product.

Part of the RBM's evaluation process will be to determine the format most suitable to its requirements. Since banks are looking for flexibility and functionality, the trend has been to adopt the financial management system format supported by appropriate modules providing banking functionality. Since the RBM is about to move away from a specialist banking system because of its lack of flexibility, it was argued that serious consideration should be given to solutions based on strong financial management systems.

- b) The RFP document incorporated timeframes for submission of tenders and evaluation that appeared too ambitious. If the RBM is to receive a good response to its invitations for tenders, a reasonable timeframe should be allowed for the tenderers to assess the RBM's requirements and prepare their tenders. Likewise, this process is a major change for the RBM and involves both a large financial commitment and a commitment to systems for the foreseeable future. Since it is important that a reasonable time is allowed to assess the tenders and to understand their implications, recommendations were presented to extend the timeframe.
- c) The RFP included a requirement for a retail banking module. It would appear that the level of retail banking undertaken by the RBM has declined significantly over a number of years. Thus, it was recommended that the RBM should reconsider its requirements for retail banking. The requirements could most possibly be met by a good general ledger system supported by a module providing banking functionality.
- d) The RFP included a requirement for an inventory module. As the value of inventory held by the RBM is not significant, it was recommended that the RBM should consider whether the cost of an inventory module was justified. Improved control over inventory could be achieved by means such as maintaining a greater degree of categorization of inventory in the general ledger and the use of statistical fields to track quantities and tight budgetary controls.
- e) The intention of the project team was to consider the financial proposal after reviewing the technical proposals. However, consideration should be given to both proposals at the same time. Significant time could otherwise be spent on evaluating proposals that far exceed the RBM's budget envelope.
- f) The proposed evaluation factors were discussed with the RBM, and the following changes were suggested:
 - Splitting the vendor qualifications between an assessment of the implementer/vendor and the software company/companies behind the proposed applications
 - Splitting the technical solution between an assessment of the software applications and the hardware requirements.
 - Increasing the weighting given to the technical solution as the principle objective of the project is to obtain a more technically appropriate solution.

- Clear guidelines need to be formulated and documented for the grading process. These should identify the key features required of the solution and a methodology for marking those features.
- g) The RBM needs to be realistic about its expectations for a new accounting system and the type of functionality it should offer. For example, it would not be a normal expectation for such a system to identify and calculate the amount of impairment in relation to impaired loans. Such activity would normally be conducted outside the accounting system using human assumptions. The results would be reflected in the accounting system.

A further project visit was undertaken in March 2010 the principle objective of which was to assist the RBM in the evaluation of ten bids received as a result of the RFP. The two experts together with the RBM evaluation team of eleven members retired to a location outside of Lilongwe for a week to enable the evaluation process to take place without distraction.

Each bid was considered and marked based on the criteria established at the time of the development of the RFP. At the end of this process a clear shortlist was established consisting of four principle contenders. These contenders will now have their pricing evaluated and be invited to give practical demonstrations of their solutions following which the RBM will visit sites using the solution.

The importance of the RBM clearly documenting all activities they expect the solution to handle was stressed together with the need to go through these individually at the time of the presentations. It cannot be considered prudent to simply accept general claims in the tender documents with respect to the functionality of the systems.

While the project team believes that the RBM arrived at a realistic shortlist, the review process could probably have been shortened by initially focusing principally on the adequacy of the accounting solutions provided.

3. Key factors for a successful project implementation

As in the June 2008 project, the key facets of a successful project implementation were discussed, and the following key factors for a successful project implementation were highlighted in the July/August 2009 project:

- a) A project such as this will impact on the workings of a number of departments and is a major undertaking for the RBM. It is important that it has a sponsor/champion at a senior level (e.g. the Deputy Governor), who will keep a regular overview of the project.
- b) Large projects can create much uncertainty and insecurity within organizations among those not directly involved in the projects. This can be overcome or minimized by effective communication to all staff concerning the objectives of the project and regular reports on its progress. In the RBM, the intranet is one of the modes of communicating the developments in the project to the members.

- c) Once the implementation commences it will require a full-time commitment from the members of the project team. Plans should therefore be made to hand over their day-to-day responsibilities prior to the start of the implementation. There will however need to be clear planning for the cutover from the test/implementation environment to the live environment.
- d) The project implementation plan should be based on a realistic timeframe which is at the same time not too generous.
- e) There should be regular documented meetings of the implementation committee focusing not on what has been achieved but on issues looking forward. It is important to try to anticipate problems before they arise.
- f) The project will comprise a large number of detailed tasks, many of which will be interdependent. It is important to use a good project management tool that can detail tasks, responsibility for their completion and timeframes to ensure the smooth progress of the implementation. Members of the implementation team must understand their accountability for completion of tasks that they have been assigned within the set timeframes.
- g) Change management will be a consequence of the project. The required changes will be determined by the system selected. It should be borne in mind that modern systems are built around best practice. Where necessary, the RBM practices should be changed to meet the processes of the system.
- h) Every attempt should be made to avoid any form of customization to the core system.

4. Project preparation

The RBM may undertake a number of activities in advance of the commencement of the implementation. The following activities would ensure a smoother implementation:

- a) A review of the current reports produced internally to assess both if they are currently required and also if they meet the RBM's ongoing requirements, and determination of which reports will initially be required from the new system. Once the reporting requirements have been determined, a logical structure for the chart of accounts should be developed to support those reports.
- b) The take on of data to the new system will require the availability of data with the appropriate level of detail. In particular, the current exercise of detailing all items and balances comprising the RBM's fixed assets should be completed. It was also noted that the RBM currently has no threshold value for the capitalization of fixed assets. A threshold is good practice, and it is recommended that the RBM should consider adopting a threshold value for capitalization. Up-to-date reconciliations of all suspense accounts will be required to start with the correct analyses of all such balances.

The ICTD is in the process of upgrading the Currency Stock Management System in an effort to ensure that the take on data from this system to the General Ledger is at the expected level of detail to ease interfacing. As is the case for other systems which will require interfacing with the new General Ledger, the respective suppliers will need to be involved.

- c) The existing general ledger should be reviewed both to remove any unnecessary balances and to ensure that balances are correctly reflected. For example, there are currently offsetting balances for interbranch accounts that could be eliminated. Some IMF balances are recorded as local currency balances instead of SDR balances and this prevents automatic revaluation.
- d) The RTGS system is currently only automatically interfaced to MIDAS for certain transactions. The automation of the interface should be completed with the use of a clearing account in the general ledger.

V. Organizational structure and compliance with international financial reporting standards

1. Organizational structure

Ongoing compliance with the International Financial Reporting Standards (IFRS) will require that a best practice organizational structure is in place and that the necessary staff and skills are available. The existing structure of the AFD, with the department subdivided into three divisions, the Management Accounting Division, the Financial Accounting Division (including payroll) and the Back Office Division, is in line with that of most central banks. A prospective enhancement of the accounting and associated systems software will reduce the current manual reconciliation processes in the AFD and lead to a reduction in staff.

The combination of an overall staff reduction and an increased accounting focus on the IFRS role is likely to change the skills mix requirements. Accordingly, it was recommended that the RBM consider inclusion of one new accounting research position. A qualified graduate could review ongoing IFRS developments in relation to central bank accounting, and enhance the RBM's ability to play a greater role in the preparation of the annual financial statements, with less reliance on the external auditor in the preparation phase.

System development and enhancement are normally resource intensive, both in terms of staffing, training and hardware/software acquisition. Given current and anticipated work requirements in the ICT area, it was recommended that the RBM assess the appropriate staffing level of the ICTD.

2. Compliance with IFRS

The annual Financial Statements of the RBM are externally audited and have received an unqualified clean audit opinion in terms of IFRS full compliance. The review of the annual Financial Statements undertaken during the project visit in June 2008 confirmed the views of the external auditor.

While the AFD is responsible for the initial drafting of the annual Financial Statements, the final version is prepared by the external auditor. Although the RBM has full ownership and responsibility for the outputs, in terms of best practice, the RBM should fully prepare its own financial statements. The external auditor should only be involved in the review process. With a new accounting research position, the RBM's in-house capability to complete the full set of financial statements and to ensure ongoing IFRS compliance would be enhanced.

Another source of ongoing IFRS related material is the various central bank websites which can be accessed through www.bis.org. Here, an AFD research accountant could compare current regional central banks' Annual Reports (which include the financial statements) and look at other central banks that have achieved IFRS compliance in order to "benchmark" the RBM practices and ongoing developments.

3. Financial statements

During the project, some observations were also made on the RBM's financial statements:

- a) Many central banks structure their balance sheets and income statements to distinguish between foreign and domestic assets and liabilities. This presents a more meaningful picture to the reader of the accounts.
- b) The financial statements do not currently disclose clearly in the notes an accounting policy for repurchase agreements or the balances relating to such transactions. A suggested disclosure would be as follows:

"Repurchase Agreements

In the course of its financial market operations, the RBM engages in repurchase agreements involving domestic currency securities.

Securities sold and contracted for purchase under repurchase agreements are classified under IAS 39 as "at fair value through profit and loss", as they are held for trading, and reported in the Balance Sheet within the relevant investment portfolio. In accordance with this standard the securities are valued at market bid prices on the balance sheet date and realized and unrealized gains or losses are taken to profit. The counterpart obligation to repurchase the securities is reported in other liabilities at amortized cost, the difference between the sale and purchase price is accrued over the term of the agreement and recognized as interest expense.

Securities purchased and contracted for sale under repurchase agreements are classified under IAS 39 as “loans and receivables” and valued at amortized cost. The difference between the purchase and sale price is accrued over the term of the agreement and recognized as interest revenue.”

- c) The funds placed with external fund managers are not properly categorized within the financial statements. They are currently reported as part of balances with foreign banks due to mature within 3 months. The requirements of IFRS are for these balances to be reported by their natural category. A statement that they are easily convertible to cash is not appropriate.

4. Distinction between realized and unrealized foreign exchange profits

During the July/August 2009 project visit, a work shop was conducted on how to distinguish between realized and unrealized foreign exchange profits using the average cost methodology commonly adopted by central banks. The explanatory notes and two simple examples are attached as Appendix 3.

APPENDIX 1

Critical success factors for project implementation – in terms of best international practice

In a number of central banks, the following factors have been critical for successful implementation of major enhancements and replacement modules for an automated software system, including those related to the accounting and associated information systems function:

- Senior Management support for the overall project. This will be evidenced by strategic planning inclusion; annual budget and business plan identification (such projects may extend beyond one year); clear lines of responsibility, including oversight by a functioning Information Technology Steering Committee. This will include ranking of projects between the various competing central bank user departments, and regular review to ensure that the projected project deadlines are being met. Slippages will require prompt adjustment of input resources or a rescheduling of outcomes.
- Full end-user department acceptance of responsibility and ownership. During the development and implementation phase, the end user and the ICTD will have joint responsibility and ownership for the project. Once a project has been signed off as fully operational, the end-user should be fully responsible.
- For each enhancement, full-time project teams as well as an individual project manager are desirable. Where involved staff (either from the supplier support or the central bank) still have responsibility for other day-to-day operations, the project will usually be deferred due to other work pressures. Separate physical location is also desirable so the members can bond as a team, and not be subject to external interruption. A second-best solution will be to implement software related projects by designating a project team that works part time (e.g. two days a week, or by using out of hours overtime). However, in such approaches, day-to-day work pressures again intrude, and such arrangements may not be regarded as best practice since there will always be legitimate day-to-day excuses for why project delays occur.
- A Project Steering Committee needs to coordinate each project; such a committee may have responsibility for a number of related projects, e.g. “accounting systems enhancements”. The members need to be sufficiently senior to have management status (e.g. generally at least at deputy department manager level), but to also have enough technical and operational expertise to understand the project requirements. They need to be on hand to give immediate assistance to the Project Manager should he/she encounter bottlenecks in the work being done. The Project Steering Committee should provide regular reports to the Information Technology Steering Committee (which is monitoring overall information technology developments) as well as to individual relevant department heads.
- Very clear end-user specifications are necessary. Much time can be wasted as software is being enhanced, but the end products required are changing. It is also very important to determine, for example, what can be handled within existing systems (e.g. MIDAS accounting package) and what will need to be a systems end-user requirement for a future replacement software package. This works best with close liaison between the ICTD and the relevant end-user (e.g. the AFD in this example).

- It should be clear as to which party, i.e. Bank or software supplier, is responsible for development of any interfaces or enhancements to interfaces. Considerable time and resources can be lost and additional expenditures incurred, if such matters are not clarified during the initial scoping of the work.
- While final implementation dates may be one or two years into the future, a clear development and implementation timeline, with appropriate benchmarks or interim completion and achievement deadlines are essential to effective project monitoring. Any project slippage needs to be pinpointed early and resources need to be reallocated by senior management review (e.g., the Information Technology Steering Committee may have to slow another project and reallocate resources).
- Within any business plan, particularly for the ICTD, developments will be slowed by “urgent” fixes, which may stop operational software from continuing to function. While these are not possible to predict, the ICTD business plan will need to incorporate resources and time to meet such requests. Again this estimate should have been included in initial project schedules for consideration by the Information Technology Steering Committee.
- There are two methods of implementation once the software enhancements and initial testing have been completed by the ICTD and the end-user area. This also applies to any full replacement systems software. They are known as “parallel running” and the “big bang” approach. Under the former, testing of new and existing software is undertaken side by side (or parallel). This can often be done very efficiently using historical series data as many days’ transactions and processes can be compared without having to wait for current operations cycles (daily, monthly, quarterly) to be completed. The other option is to discontinue the old processes on the date the new systems become operational, generally with some disaster recovery option for old systems if the new version fails. For enhancement of existing software, test systems are generally large enough in central banks to ensure that the preferred parallel run basis can be adopted. When major new software systems are being installed (e.g. a MIDAS accounting system replacement as discussed in the next section), computer hardware capacity may be an issue and the “big bang” approach is the only option. Here it will be critical to have appropriate disaster recovery plans in place should the new software fail to perform.

In consultation with the users and guidance from the ICT Steering Committee, the ICTD will be able to plan accordingly for the chosen option (parallel or big bang); although the preferred option should be discussed with the contacted vendor during the early stages of the project life cycle.

APPENDIX 2

List of software enhancements

ACTIVITY	CURRENT METHODOLOGY/ SOFTWARE	VOLUME DAILY	EXTERNAL SOFTWARE SUPPORT	INTERNAL ICT SKILLS RE EXISTING SOFTWARE	PROPOSED REFINEMENTS/ UPGRADES (including work in progress)	RESOURCES REQUIRED	PRIORITY RANKING	ESTIMATE TASK TIME
General Ledger	Midas software	1000	Uk Misys International staff and consultancy charges impacting on on level of support	Computer programming skills	Interface with several stand alone systems such as RTGS, Book entry system, autoreconciliation	Consultancy costs ICT and ADF personnel time	2	3 Years
Accounts payable	Payment is done through Midas and RTGS. Reconciliation is done manually	50	Uk staff for Midas and Perago South Africa for RTGS. To facilitate interface btm Midas & RTGS	Computer programming skills	Straight through processing between Midas and RTGS	Consultancy costs ICT and ADF personnel time	1	1 Year
Payment of salaries and other payroll related activities	Done in Payplus+ and payment effected through Midas & RTGS	50	Uk staff for Midas and Perago South Africa for RTGS. To facilitate interface btm Midas, RTGS, and Payplus+	Computer programming skills	Interface of Payplus+ with Midas system automation of loan processing	Consultancy costs ICT and ADF personnel time	9	1 Year
Fixed asset and stock control management	manual	10	Yet to be decided whether to develop in house or source from outside	Computer programming skills	Automation of the fixed asset and stock control management	Funds for project ICT expertise and ADF personnel	5	2 Years
Reconciliation of accounts	manual	1000	Intellimatch Software (currently not working)	Computer programming skills	Enhance capabilities to enable it reconcile more accounts. Abandon system for a new reconciliation system	Consultancy costs ICT and ADF personnel time	4	1 Year
Total workflow of treasury operations	manual	10	Yet to be decided whether to develop in house or not	Computer programming skills	Automation of the total treasury workflow operations	External expertise, ICT and ADF personnel	3	2 Years
Revaluation of IMF assets	manual		Yet to be decided whether to develop in house or not	Dependent on whether built in house or not	Automation of the process	External expertise, ICT and ADF personnel	8	6 Months
Budgeting	manual		Yet to be decided whether to develop in house or not	Dependent on whether built in house or not	Automation of the process	External expertise, ICT and ADF personnel	6	1 Year
Preparation of management accounts	manual	500	UK staff for Midas enhancement	Computer programming skills	Enhancement of the existing Midas system	Funds for project ICT expertise and ADF personnel	7	1 Year
Preparation of forecasts	manual		Yet to be decided whether to develop in house or not	Dependent on whether built in house or not	Automation of the process	Funds for project ICT expertise and ADF personnel	10	6 Months

APPENDIX 3

Identification of realized foreign exchange profits and losses

- 1) This appendix addresses the principle on which realized foreign exchange profits or losses are determined.
- 2) As a basic principle the realized gain or loss applicable to the sale of any form of asset equals the sale proceeds less original cost; for example

Sale proceeds, USD 100 equals K	14,500
Original cost	14,000
Realized Profit	500

- 3) The major question for a central bank in the case of currency sales is how to determine the original cost of an amount of currency. Currency is normally held in a pool with daily movements of purchases and sales and it is not normally possible to allocate a specific cost to a specific sale (except where it is matched to an equal purchase on the same day)
- 4) Where there is a pool of assets, three principal costing alternatives exist for determining the cost of an asset.
 - d) Last in First Out (LIFO)
 - e) First in First Out (FIFO)
 - f) Average Cost
- 5) The methodology commonly adopted by central banks is to use an average cost basis. Systems to match on a FIFO or LIFO basis would be very complex because in central banks amounts being sold will not always equate exactly to amounts purchased as they do in industrial concerns.
- 6) When implementing such a system in a central bank it is first necessary to determine a starting average cost. If the bank has existing unrealized gains, the starting average cost may be calculated on a prorata basis. If the bank has no unrealized gains, then the starting average cost should be the current exchange rate.
- 7) Once established, the starting average must now be recalculated periodically (normally daily or monthly) to reflect the effect of the periods transactions. The average cost will change as currency is bought and sold and the basic principles applied are based on a period's net transactions.
 - g) If the period's transactions result in a net increase, the average cost of the net increase in Malawi Kwacha (K) is added to the historical Malawi Kwacha pool cost and a new average calculated.

- h) If the period's transactions result in a net decrease, the average cost of the net decrease is the exiting average cost, so the overall average cost does not change.
- i) The calculation of periodical changes is illustrated below.
- 8) The resulting average cost at the end of each period should be used to calculate the balance on the unrealized profit reserve for each currency; this is always the difference between the currency at current exchange rates and at average exchange rates.
- 9) Posting the movement over the unrealized profit reserve to the profit and loss account and the period's revaluation entry identifies the realized profit or loss on foreign currency transactions.
- 10) The average cost method may be used to distinguish between realized and unrealized foreign exchange profits of the bank as a whole. It is not an appropriate tool for measuring the performance of a bank's dealing room. Dealing room profits should be measured against current rates and not against a historic rate. For example, in the case of a depreciating currency, measurement against historic rates could encourage the buying and selling of currency to create realized profits, which would overall reduce the bank's profitability as the purchases would be at a lesser rate than the sales.

Example of calculation of the change in average cost where there are net purchases in the period

Assumptions

Exchange rate at beginning of period	140
Exchange rate at end of period	142
Average cost at beginning of period	125

Net Purchase

	USD	K Value	K Cost
Opening Balance	100	14,000	12,500
Purchases	300	42,350	
Sales	(150)	(21,300)	
Net Movement	150	<u>21,050</u> 35,050	21,175
Revaluation adjustment	450		
Closing Balance	250	35,500	33,675
Closing Average Cost	33,675/250 = 134.7		

BD Cost of net addition is $150 / 300 \times 42,350 = 21,175$

Opening balance unrealized profits	$14,000 - 12,500 = 1,500$
Closing balance unrealized profits	$35,500 - 33,675 = \underline{1,825}$
Movement in unrealized profits	325

Accounting Entries for revaluation and realized gain

Cr Realized Gain	125
Cr Unrealized Profits	325
Dr Currency Position	450

Proof of realized gain

Sale Proceeds	21,300
Cost of sale	
$150 / (250+50) \times (35,250+7,100)$	$= \underline{21,175}$
Realized Gain	125

Example of the change in average cost where there are net sales in the period

Opening Balance	100	14,000	12,500
Purchase	150	21,150	
Sales	(200)	(28,400)	
Net Movement	(50)	(7,250)	(6,250)
Revaluation adjustment		350	
Closing Balance	50	7,100	6,250
Closing Average Cost	$6,250 / 50 = 125$		

Cost of net sale is calculated at opening average cost i.e. $50 \times 125 = 6,250$

Opening balance unrealized profits	$14,000 - 12,500 = 1,500$
Closing balance unrealized profits	$7,100 - 6,250 = 850$
Movement in unrealized profits	(650)

Accounting entries for revaluation and realized gain

Dr Unrealized profits	650
Dr Currency position	350
Cr Realized gain	1,000

Proof of realized gain

Sale Proceeds	28,400
Less cost of days purchase	(21,150)
Cost of net sale	
50×125 (average cost)	$(6,250)$
Realized gain	1,000

Chapter V

Currency Management

Trond Eklund²⁴, Peder Natvig²⁵ and Moza Zeleza^{26 27}

I. Background

The population of Malawi is still predominantly rural-based, and cash remains the primary means of payment in the household sector. Although the authorities have promoted the development of electronic interbank systems and systems for payment services in cooperation with the banks, a significant proportion of all business transactions are conducted through cash payment. Cash is expected to play an important part in the Malawian payment system for many years to come. Over the three-year period 2006-2008, the value of total currency in circulation has had a yearly average increase of 28.4 percent, compared with 18.9 percent for nominal Gross National Product (GNP). The figures shown in the tables below illustrate the role of cash in the Malawian payment system.

Selected Currency Indicators

	2006	2007	2008
Growth rate of cash in circulation (annual, in percent)	26.2 %	34.1 %	24.9 %
Total cash in circulation, in percent of nominal GNP	4.6 %	5.3 %	5.5 %

Average Value and Volume of Banknotes and Coins in Circulation, 2008 (Kwacha 140=USD1)

	Millions of Kwacha	Million pieces	Average value per piece
Notes	28,889.3	145.3	198.8
Coins	239.6	108.1	2.2

²⁴ Trond Eklund was MCM/IMF short-term expert, and is Director/Chief Cashier, Cashier's Department, Norges Bank Financial Stability.

²⁵ Peder Natvig was MCM/IMF short-term expert, and is Senior Advisor, Cashier's Department, Norges Bank Financial Stability.

²⁶ Moza Zeleza is Executive Director of the functional area Corporate Services at the Reserve Bank of Malawi. The functional area of Corporate Services comprises the Administration Department, the Currency Management Department and the Information and Communication Technology Department.

²⁷ We wish to thank Åke Lönnerberg, MCM/IMF and Director Meg Kajijanke and staff of the CMD for helpful comments.

Average Number of Banknotes and Coins in Circulation (in million pieces), 2008 Denominations

Banknotes			Coins		
	Million pieces	Percent of total		Million pieces	Percent of total
K500	48.70	43.28	K10	10.25	9.48
K200	14.11	12.50	K5	9.82	9.08
K100	12.95	11.50	K1	88.01	81.44
K50	15.17	13.47			
K20	21.69	19.26			
Total	112.62	100.0	Total	108.08	100.0

Currency outside Banks, as share of aggregate money supply (M1 and M2)

	2006	2007	2008
M1	39.4 %	36.2 %	35.8 %
M2	19.1 %	18.7 %	18.1 %

Total costs associated with the Reserve Bank of Malawi's (RBM) currency management role amounted to nearly 40 percent of the RBM's "General and administration expenses" in the period 2006–2008. Currency costs are likely to remain high due to Malawi's economic structure and the fact that it is a landlocked country. The overall objective of the project on Currency Management has been to achieve efficiency gains in the distribution and handling of currency, and cost savings through reviewing and streamlining the existing currency management framework, including the division of responsibility between the RBM and the banks. The ultimate objective has been to attain a policy approach and a framework that would be conducive to a declining cost trend in all aspects of the currency management cycle.

According to the Reserve Bank of Malawi Act (1989), the RBM "shall have the sole right of issuing banknotes and coins throughout Malawi and neither the Government nor any other person shall issue any notes and coins which are likely to pass as legal tender." The responsibility of issuing legal tender currency in Malawi involves responsibility for the properties of banknotes and coins, such as denominations and design, and for ensuring that sufficient quantities are supplied to cover the needs of the country. In order to achieve its tasks, the RBM interacts with the banks as they come to withdraw and deposit cash. It is through the banks that the RBM indirectly provides cash services to households.

A major task of the project on Currency Management has been to evaluate the need for clarifications and changes in the RBM's role and responsibility in cash distribution, and to accomplish an efficient division of responsibilities and functions among the various stakeholders. The main focus has been on the geographic distribution of cash, transport and the structure of

depots in addition to the terms for the banks' deposits, withdrawals and cash holdings. The features of banknotes and coins and securing the necessary quality of currency in circulation, including a reduction in the relative share of counterfeit notes, have also been addressed. These subjects are covered in Section II.

Another major task has been to evaluate the RBM's internal processes which are aimed at increasing efficiency and reducing costs in parallel with a sound risk management. These subjects are covered in Section III.

II. RBM's role and responsibility in the cash cycle

1. Main features of an efficient payment system

The total payment system includes all methods, arrangements and devices that may be used to execute or mediate payments. An efficient payment system is characterized by the existence of available means of payment and payment instruments that are adapted to needs and by the possibility of executing payments quickly, securely and with the lowest possible use of resources. When users are aware of the prices and features of the various alternatives, they will choose the solutions that are, on the whole, most attractive. If the prices encountered by the users reflect the cost of producing the services, the users' choice will result in an efficient overall use of resources.

Payments are generally executed using two methods, account deposits and cash. Whereas moving account deposits largely involves the use of electronic instruments, moving cash requires a large degree of physical handling. This is the case when cash is circulating as a means of payment between banks, businesses and the general public and also when it is out of circulation and belongs to the RBM. Moving and storing banknotes and coins require a large logistics apparatus and involve considerable costs for many operators. To facilitate optimal efficiency in the overall payment system, it is essential that there is an appropriate distribution arrangement between cash and account deposits, that cash is supplied and handled as rationally as possible, and that security is satisfactory. The banks and the end-users should be aware of the prices and features of cash and other means of payment. Otherwise, there is no incentive to develop an optimal mix of means of payment, which among other things entails an efficient overall use of resources.

In order for cash to function as an efficient means of payment, it is necessary that market participants have confidence in cash, and that cash has features that are adapted to needs. Moreover, it is a prerequisite that cash is available to the general public and businesses. This requires storing large amounts of cash and efficient cash processing. Efficient processing means that the scope of transport, counting, sorting and destruction is correct and that there is an appropriate division of responsibility between the central bank and others who process cash, so the tasks are executed with the lowest possible use of resources.

In principle, users should cover the costs of using cash, just as they should cover the cost of using other means of payment. However, in certain areas, the central bank should cover specific costs:

- The central bank’s responsibility for issuing banknotes and coins also includes responsibility for replacing unfit cash. This implies an obligation to cover certain costs connected with redemption and destruction of worn and damaged banknotes and coins withdrawn from circulation.
- In principle, everyone who is in possession of banknotes and coins extends an interest-free loan to the central bank. This enables the central bank to reduce its need for external financing and/or invest and achieve a return on capital equivalent to this interest-free loan, thereby providing the central bank with income, defined as “gross” seigniorage. If the users in addition were covering all costs related to the production and distribution of cash, it could be argued that they would cover more than the costs of using cash, and this would not be optimal in terms of efficiency. It would be difficult to find a system where the net income in excess of an optimal resource allocation was returned to those bearing the extra costs. A more practical solution would be that the central bank covers the production costs and some costs in connection with cash distribution. These should be costs that are otherwise difficult to allocate to the “correct” market participant without disturbing incentive structures that are desirable in terms of efficiency.

In light of these assessments, it could be argued that the following costs should be covered by the central bank:

- costs related to the design and production of banknotes and coins;
- information to users;
- costs related to receipt of damaged or worn banknotes and coins, as well as delivery of banknotes and coins of acceptable quality to replace them, so-called “free-of-charge services”;
- authentication and destruction of damaged and worn banknotes and coins; and
- storage of cash in central bank depots and costs of transporting cash between these depots.

2. Division of responsibility between the RBM and banks in cash supply functions

According to the Reserve Bank of Malawi Act, the RBM is required to issue banknotes and coins and to ensure that cash of a sufficient quality is available to the society. The RBM supplies banks with cash, and banks are responsible for further distribution to the public. Similarly, the general public requests banknotes and coins and delivers surplus cash to banks.

The RBM’s expressed goal is to fulfill these obligations in an economical, efficient and secure manner. In addition to fulfilling the direct statutory requirements, it could be argued that the RBM should only have responsibility for functions that the market is unable to provide efficiently, or that the RBM can provide more efficiently than the market. Even though the RBM in principle is responsible for a function, it may choose to allow others to perform all, or part of, the tasks ensuing from this responsibility.

Regarding the division of responsibility between the RBM and the banks, the following functions need to be addressed:

- Procurement and ordering
- Processing
- Cash distribution

2.1 Procurement and ordering

As issuer, the RBM is responsible for designing banknotes and coins, ensuring that an adequate quantity is produced and that both design and quality are appropriate. Banknotes and coins must be designed in such a way that they are difficult to copy, that they include features that make it possible to differentiate between genuine and counterfeit notes, and that they have features that allow them to function efficiently as a means of payment. The RBM is also responsible for ensuring that the authenticity features are widely known. This is especially important in relation to “the average consumer”, who does not have access to special tools to verify that banknotes and coins are genuine. Given the importance of the public’s general confidence in the authenticity of the domestic currency, information on counterfeits in general, and more specifically on security features, should be handled in a way that maintains the credibility of banknotes and coins.

The Malawian banknotes and coins are produced by external suppliers, and the procurement is the responsibility of the RBM. Typically, the RBM invites the suppliers to tender for a 4 year contract. The purchase of banknotes and coins represents a major part of the RBM’s total internal costs for currency management and involves considerable risks.

In order to fulfill its obligations regarding the supply of banknotes and coins, the RBM has cash inventories. The level of inventories is evaluated in view of ordinary as well as extraordinary circumstances. In order to predict the demand for cash and reduce the uncertainty concerning inventory requirements, it is important to have a good understanding of the major factors affecting the short- and long-term demand for cash.

2.2 Processing

The RBM is responsible for the destruction of banknotes and coins and for authenticating cash that is to be destroyed. At present, the RBM performs sorting of banknotes and coins; authentication verification (authenticity verification or just authentication on its own without verification), quality sorting, and packaging fit and destroying unfit banknotes and coins. The banks are currently doing some first level sorting, but this needs to be enhanced. The banks mainly supply their customers over the counter at the bank branches, and to a certain degree through ATMs. Banknotes for dispensing through ATMs have to be of a certain minimum quality. As in other countries, an increase in the use of ATMs is to be expected in the years to come, and there will be a growing need for quality sorting services.

It is necessary to distinguish between central bank tasks following from the RBM’s statutory responsibility for issuing banknotes and coins, and those for operations of a more commercial

nature. The banks' desired quality standards could be in conflict with the RBM's definition of fit and unfit banknotes, which is set to arrive at an optimal cost level, given the RBM's responsibilities. Nonetheless, it is considered desirable that such a distinction should not be made at the expense of economies of scope and scale in the automated processing. The RBM has high-capacity banknote sorting machines, which in the same operation carries out authentication, quality sorting, and automated destruction of banknotes. Thus, it is feasible to exploit economies of both scale and scope in the processing when the sorting services for the banks are carried out alongside destruction, and under the assumption that the quality standards are adhered to.

The RBM shall ensure that the central bank tasks are discharged in the most appropriate manner possible, which implies cost effectiveness. It is also important to ensure that market participants demand a "correct" volume of services, and that the services have been provided by the best qualified operators. This presupposes that the prices for these services are cost-based.

In order to protect themselves against losses due to counterfeiting, the market participants wish to verify that the cash accepted is genuine. This implies that there is an incentive also for agents other than the RBM, mainly banks, to undertake sorting in order to authenticate the banknotes and coins. Moreover, market participants are demanding other types of processing services than the RBM, such as sorting fit notes into more than one quality standard and packing banknotes and coins in different types and sizes of packages. They should determine the scope and form of these services on the basis of the needs and the costs of the various alternatives. This would pave the way for efficient solutions, where the market participants demand a "correct" volume of services, and the services are delivered by those who can do so most efficiently.

The RBM's role in the sorting of cash has an impact on the efficiency of sorting. To increase overall efficiency, the RBM could consider requiring that banknotes and coins are sorted into two qualities, fit and unfit for redistribution, before they can be accepted as deposits in the RBM. Sorting according to quality would then become the banks' responsibility, and the associated costs would be covered by the banks. Alternatively, the RBM could introduce fees to cover the costs of the sorting services it provides. In order to reduce internal cash-related costs, the RBM should not be responsible for processing services demanded by the banks unless they are priced according to the cost of producing them.

If market participants become engaged in sorting services, the RBM would have to establish rules for quality control so that banknotes and coins that are not fit for redistribution are actually removed from circulation. In this case, the RBM would have to verify the procedures for authentication and ensure that the quality of sorting is satisfactory. Moreover, the control of quality and authenticity could be based on a random sample of banknotes and coins delivered to the central bank for redistribution. For unfit banknotes and coins, control should be an integrated part of the actual destruction.

Various options for the organization of the processing of banknotes and coins could be considered. The challenge is to find an organizational structure containing the necessary

flexibility to meet the needs of the banks in a competitive market. A separate company to cover all the banks' sorting and cash handling needs, owned jointly by the private banks, could constitute one option. As an intermediate solution, the central bank could for a limited period be engaged as a minority owner of the sorting company. Otherwise, the individual bank should take responsibility for the sorting. As a result, the RBM could concentrate on destroying banknotes and coins and redistributing sealed packages of fit notes and coins sorted by this new company.

2.3 Cash distribution

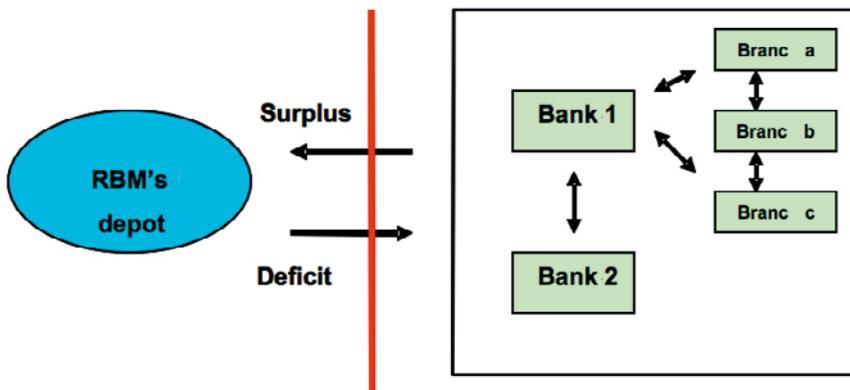
Given full information concerning costs, prices and quality, market participants are best qualified to find optimal solutions for the distribution of cash. The RBM has a role to encourage market participants to constantly seek the best solutions based on cost/benefit analyses, and to ensure that distribution sites and processing solutions change in line with the needs of market participants. Initially, this would imply that the RBM supplies banks from just one business site. Security and logistics considerations may, however, necessitate having stocks at more than one site. In addition, the RBM might be better equipped than banks to transport large amounts of currency over long distances. This might imply that the RBM could have a limited number of additional depots and business sites, and handle the transport between them in a system that would constitute the "central nerve" of the supply and distribution of cash.

This is to a major extent already the case. The RBM has cash centers in Lilongwe and Blantyre in addition to two sub chests in Mzuzu. In Malawi, the further supply and distribution to households and business sectors are handled by the banks. However, it could be argued that the banks should take responsibility for redistributing cash among different banks and bank branches also within a geographical region.

In assessing how to improve the efficiency in cash distribution, one has to take into consideration the fact that the RBM's overriding responsibility is to maintain the quality of banknotes and coins in circulation. Through the obligation to accept worn and damaged banknotes and coins and to replace them with banknotes and coins of acceptable quality, the average quality of cash in circulation is maintained. Therefore, incentives to sort out and return worn and damaged banknotes and coins to the RBM should be addressed when defining the division of the responsibility between the RBM and the banks.

Presently, the RBM takes responsibility for the cash distribution among banks and their branches without imposing any fees. In practice, the central bank operates like a retailer, as the distribution of cash among banks and among branches of individual banks is largely handled through the RBM. Banks are frequent users of the RBM's depots, which are storing cash that would normally constitute the banks' stocks for short-term transactions, as many bank branches are delivering cash one day and withdrawing the same amount the next day. As a result, there is an undesirably large amount of cash coming into the RBM, and a major part of this is delivered in the form of small transactions. To improve efficiency, the RBM could consider acting more as a wholesaler in the distribution of currency.

The chart below illustrates a situation where banks are responsible for redistribution within a geographical region of a certain size. This region is “served” by one central bank depot, and the intention is that transactions between depots and banks should be few and sizeable.



Banks would have to be given greater incentives to assume more responsibility for the distribution of liquidity at the retailer level. Furthermore, the means used and the changes made must not be in conflict with the desire to maintain the quality of banknotes and coins in circulation and to retain the economies of scope and scale in cash processing.

The terms for deposits in and withdrawals from the central bank constitute the main instruments to achieve the role as a “wholesaler”; value date rules, standard units, packaging, charges for deposit/withdrawal services and penalties.

3. Implementing the role as a “wholesaler”

In order to promote a competitive framework and an efficient payment system, a common trend among central banks has been to concentrate on wholesale activities, and pass on an increasing share of the responsibilities and consequently the costs of currency supply to the banks. In addition to fulfilling direct statutory requirements, a central bank should in general only have responsibility for functions that the market is unable to provide efficiently, or that the central bank can provide more efficiently than the market.

Traditionally, the Malawian banks have performed insignificant currency sorting and there have hardly been any restrictions on banks’ deposits and withdrawals of cash from the RBM. The services have been provided free of charge, and the RBM has borne the entire cost burden of sorting currency. This division of responsibility has been very convenient for the banks, and it has proved costly for the RBM. Hence, the banks have had no incentive to arrive at optimal solutions with an efficient use of resources. The prevailing division of responsibility has not encouraged banks to invest in infrastructure for cash distribution and processing.

To move in the direction of a wholesaler, the RBM has worked out a policy paper stating its future role and how to implement this role. In order to bring into effect the role of wholesaler, the formal division of responsibility between the RBM and the banks had to be drawn up, including terms for deposits and withdrawals. For the RBM to move into the role of wholesaler, changes will have to be implemented in, inter alia, the following areas:

- Increased responsibility for banks in sorting banknotes. Banks have to sort banknotes into fit and unfit before they are deposited in the RBM and prior to redistribution to customers.
- Increased responsibility for banks in currency distribution, by:
 - introducing fees on deposits in and withdrawals from the RBM. This will give banks incentives to trade currency among themselves, instead of using the RBM for currency clearing; and
 - increasing standard amounts for deposits and withdrawals; this will increase the threshold for using the RBM for the clearing of currency.

In addition to contributing to a general strengthening of efficiency, implementation of these measures will reduce the RBM's internal costs.

In case some banks do not build up capacity and competence in banknote sorting, they may request sorting services from the RBM and pay fees that cover the costs. The introduction of fees and higher standard deposit and withdrawal amounts will result in fewer transactions in the RBM, while lower costs and the introduction of fees will generate higher net income. The RBM has discussed the possibility of establishing a separate company to cover banks' needs for sorting and cash handling, e.g., owned jointly by the banks. However, the RBM has concluded that this is not a feasible solution at this juncture.

The policy paper on the RBM's future currency management functions also reviews and provides recommendations on cash supply functions and services for which the RBM should remain responsible. These include the future denomination structure and quality/security features of banknotes and coins, and issues related to procurement, stock holding and currency sorting/destruction.

III. RBM's internal cash management processes

1. Background

In the RBM, the Currency Management Department (CMD, one of three departments comprising the functional area of the Executive Director, Corporate Services) is responsible for the cash related processes. The department is headed by a Director and has two divisions headed by Managers: the Currency Sorting & Operations Division and the Currency Systems & Procedures Division. The total number of staff involved in currency management activities was about 100 at end-2008. In addition, there were 10 tellers from the Banking and Payment Systems Department who are involved in receiving deposits from Government Ministries and Departments.

As already stated, everyone who is in possession of banknotes and coins gives in principle an interest-free loan to the central bank. This reduces the central bank's need for external financing and achieves a return on capital equivalent to this interest-free loan, thereby providing the central bank with income, defined as "gross" seigniorage. In the case of the RBM, the gross seigniorage has been less than the costs related to the production and distribution of cash. This partly reflects the particular features of Malawi's economic structure, but also reveals that there is considerable scope for cost savings in the currency management area. When assessing a central bank's internal cash-related processes, both security and overall efficiency, including cost efficiency, will have to be addressed. The focus of a central bank should be to reduce costs in its internal handling. In general, cost savings can be achieved in a wide range of areas, such as:

- the cost of purchasing banknotes
- the cost of purchasing coins
- the cost of purchasing machines for banknote sorting
- the cost of service and spare parts for banknote processing machines
- the cost of non-efficient banknote and coin management operations, including setting of parameters in the banknote sorting machines
- the cost of buying software/upgrading for the banknote sorting machines and
- required manpower for the central bank's operations of sorting machines and other banknote and coin activities

However, it is important that the cost saving measures should not undermine and conflict with the following general currency management objectives of the central bank:

- Issue banknotes and coins with security features that are easy for the public to identify, and that minimize the number of counterfeits.
- Draw up a Clean Note Policy that ensures right quality of banknotes in circulation, and at the same time minimizes the purchasing cost of currency.
- Issue coins that are easy to recognize/differentiate and do not interfere with earlier designs or coins of other countries.
- Supply banks with banknotes and coins at request.
- Establish a well organized and secure organization to achieve efficient currency services for the banks, secure banknote destruction, well performing fitness sorting and to avoid fraud.

2. Denomination structure of banknotes and coins

In order to reduce the RBM's costs of issuing coins and banknotes, the following measures will have to be addressed:

- review the denomination structure of coins and banknotes, including the coin and banknote boundary
- start working on the introduction of a new family of coins and
- start planning a new family of banknotes.

Implementation of these measures will also contribute to reduced sorting costs. In order for cash to remain an efficient means of payment, it is essential that the new structure of coins and banknotes also have features that are adapted to needs.

When reviewing and determining the denomination structure of coins and banknotes, it is important to determine the breaking point between the high-value coin and the low-value note. Decisions on the denomination structure should reflect several considerations, including the degree of monetization in the economy. One widely used, but not very sophisticated method is the so-called D-metric system²⁸. This system uses ratios based on an average day's net take home pay (D). The ratios go from the smallest reasonable value of a coin to the largest reasonable value of a banknote. The range or ratios are divided into two blocks, one for coins and one for banknotes. Each block is, in turn, broken down as shown in the table below.

Coins						Banknotes					
1	2	3	4	5	6	1	2	3	4	5	6

D/5,000 D/2,000 D/1,000 D/500 D/200 D/100 D/50

D/20 D/10 D/5 D/2 D 2D 5D

In the case of Malawi, the range of value for coins is now: 50t, K1, K5, K10. The RBM has stopped procuring and issuing 1t, 2t, 5t, 10t, 20t and 50t coins.

For banknotes, the range of value is now: K20, K50, K100, K200, K500. The RBM has stopped procuring and issuing K5 and K10 banknotes.

According to the National Statistical Office, the average D amounts to approximately K450. This indicates a breaking point between the high-value coin and the low-value banknote between K9 and K23, which may be considered too low. The coin note boundary in the new currency denomination structure should be higher. The recent replacement is very sensible given the relatively short lifetime of low-value banknotes and the high cost of printing and sorting.

The table below shows the denomination structure for Malawi and three neighboring countries, converted to Malawian Kwacha:

	Coins	Banknotes
Malawi	10t 20t 50t K1 K5 K10	K20 K50 K100 K200 K500
Zambia	1t 2t 17t 33t	K0.7 K1.7 K17 K33 K 167 K333
Mozambique	9 coins in the range 6t – K60	K110 K278 K555 K1,111 K2,778 K5,600
Tanzania	K5.6 K11.3 K23	K56 K113 K226 K564 K1,129

While Zambia has a lower breaking point and denomination structure than Malawi, Mozambique and Tanzania have a significantly higher breaking point between coins and banknotes and higher banknote denominations.

²⁸ IMF Working Paper, Richard K Abrams, "The design and printing of bank notes, March 1995."

Several factors will have to be considered before taking a decision on the denomination structure of coins and banknotes. One problem is that the general public normally prefers banknotes to coins, so they want the smallest banknote to be of a relatively low value. However, lower value banknotes tend to wear out quickly, so the long-term cost of issuing them can be very high. In light of the high costs both of minting/printing and sorting, the following measures were proposed:

replace the K20 banknote and the K50 banknote with corresponding coins

introduce a K1,000 banknote, and prepare for the introduction of a K2,000 banknote later and

stop issuing all tambala coins.

Introducing a K1,000 banknote will reduce the future volume of banknotes to be acquired and sorted. An estimate of possible cost savings will require assumptions on the future use of the K1,000 banknote and the extent to which it replaces other denominations. In view of the fairly low domestic purchasing power of a K500 banknote (about USD 7) and on the experiences of other countries, the introduction of a K1,000 banknote will result in a notable reduction of banknotes in circulation and thus, a considerable cost reduction. In addition, a K1,000 banknote is likely to increase the efficiency of banknotes as a means of payment. In the planning of a new family of banknotes, one could even consider including a K2,000 banknote. There should be no more than 5–7 denominations of coins and banknotes, respectively, and a new structure could be as follows:

Coins:	Banknotes:
K1, K5, K10, K20, K50	K100, K200, K500, K 1,000, (K2,000)

3. Design and security features

Coins

The new K5 and K10 coins are both bimetallic and have an attractive design with a relatively wide diameter and high weight. These characteristics make them very costly, and it is hard to justify these costs in view of the low value of the coins (K10 equals about USD 0.07). Consequently, redesigning the K5 and K10 coins was recommended. The current K1 should not dictate the size and design of the new coins. Therefore, the K1 should also be redesigned. Hence, introducing a new family of coins, comprising K1, K5 and K10, and preparing for the introduction of the K20 and the K50 coins would seem logical.

The project provided specific recommendations for sizes and material specifications of the new coins. Before the final specifications are outlined, it is important to investigate whether the Malawian coins could be confused with coins from other countries. While the time is not yet ripe for introducing K20 and K50 coins, the RBM is in the process of reviewing its family of

Kwacha coins. Future cost savings are likely to be significant and may amount to about 40-50 percent per coin.

Banknotes

The overall impression is that the Kwacha banknotes contain well functioning security elements. One could consider increasing protection against color copying machines and scanners. Changing the shape and content of the holographic stripe in a way that includes demetallized elements would further increase the security of the banknotes. It is vital that the RBM continuously evaluates the appropriate security level of banknotes to avoid future problems with counterfeiting. The counterfeiter is able to obtain ever more sophisticated equipment in the market, which makes it possible to improve the quality of counterfeits and makes it more difficult for the public to differentiate between genuine and counterfeits.

Special care should be taken with higher-value banknotes. The poorer the country, the lower the denomination of banknote counterfeiters tend to be willing to forge, and developing countries may therefore need to take more steps to protect their lower-value banknotes. Which security elements the RBM may choose for the different denominations was discussed in the project. The production costs of the security elements, the risk of counterfeiting, machine readable features, and secure destruction and design of the banknote were evaluated. In general, the elements chosen should reflect the value of the banknote, the risk of counterfeiting and the production cost.

The size of banknotes has a major bearing on production and handling costs. In relation to what is regarded as “best practice”, Malawian banknotes are large. The more banknotes that may be printed on a sheet, the fewer the sheets necessary for production. Hence, reducing the size of banknotes will lead to an efficiency increase and a decrease in production costs.

It will usually take at least two years to develop (design, proof, print, deliver) a new family of banknotes. Based on the new sizes and rationalized security features recommended to the RBM, cost savings may be roughly 10–15 percent per banknote.

In order to ensure a smooth turnover from old to new families of banknotes and coins, it is important to formulate clear policy decisions regarding:

- withdrawing of the old banknotes and coins when introducing the new ones, or the time period for parallel circulation of new and old banknotes and coins;
- how to downsize the stockholdings until the introduction of the new family of banknotes and coins;
- introducing regulations to the banks for sorting of the old and new banknotes and coins in case of cash deposits with the central bank; and
- setting up the sorting machines in the RBM so they are able to sort both old and new families of banknotes and coins at the same time.

For both banknotes and coins, it is essential for two reasons that currency production specifications are clearly stated in connection with the tender and procurement process:

- Banknotes and coins are increasingly being used in vending machines, ATMs, etc. These machines have a technical set up with specific tolerances concerning dimensions, thickness, material combinations, position of security elements, strength of signals, etc.,. In order to avoid problems for the users, the central bank should ascertain that all banknotes and coins are produced within the same, specified range.
- The central bank must be able to return banknotes to a supplier that does not fulfill quality requirements. Therefore, a detailed specification with tolerances is required in the contract.

The RBM has since embarked on a rationalization process for its banknotes and coins in order to maximize operational efficiencies in respect of currency management.

4. Procurement

Typically, the purchase of banknotes and coins represents a major part of a central bank's total internal costs for currency management, and it involves considerable risks. Consequently, the tender process must ensure that the contract for future supply should be awarded to the tenderer considered overall to be the best qualified. The scope of the deliveries within the contract for future supply would be to:

- produce and deliver the agreed banknotes and coins;
- assist in maintaining in-house know-how related to the development of the properties and functionality of banknotes and coins and to issues concerning design, production and transport of banknotes; and
- assist in upgrading existing series or issue new series.

The RBM's open tender approach is in accordance with the provisions of the Malawi Public Procurement Act (2003). The procurements within the RBM are administered by the Administration Department and by two committees:

- The Internal Procurement Committee, whose Chairperson and Alternate Chairperson are appointees of the Governor. Other members are the Directors of the Administration Department and the Accounting and Finance Department, as well as a procurement specialist.
- The Technical Evaluation Committee is appointed by the Internal Procurement Committee and comprises members from the Administration, Accounting and Finance, Strategy and Risk Management departments, the General Counsel and Bank Secretary and some procurement experts. Others with relevant technical expertise may attend on an invitation basis when and as required.

The tender process for coins and banknotes requires detailed specifications and a thorough professional knowledge, and the CMD is responsible for drafting tender documents and contracts. The RBM's revised "Tender Document for the Printing and Supply of the Malawi Kwacha Banknotes" has the following content:

- subject of the tender

- evaluation and selection of the bidding company
- design
- time and place of execution of the agreement
- procedure for submitting and opening bids
- validity of the tender
- evaluation and selection of the tenderer's bid
- draft procurement contract
- rights and obligations of the RBM
- rights and obligations of the tenderer
- other provisions
- quotations
- terms of payment
- guarantees and
- submission of bids.

The document includes the following appendices:

- technical specifications
- financial offer
- prices per quantity and
- draft contract.

In accordance with the project recommendations, the revised tender document for banknotes was extended on the following issues:

Contractual issues:

- How to proceed in case the RBM decides to upgrade or start working on a new family of banknotes.
- A more precise definition of sample banknotes is needed, one should consider using “proof print” as wording.
- Transportation responsibilities need to be clarified.
- Transfer of risk should be described in more detail.
- Deviations in the delivered quantity; one should consider a more appropriate wording for shortage and excess.
- The basis for final approval needs to be clarified; one should consider using the specification and reference notes instead of sample banknotes or proof print.
- Lead time needs to be clarified; one should consider having separate clauses on proof prints and approvals and the actual production.

Tender documents:

- Technical specifications should be further developed; in particular, tolerances should be incorporated.
- One should consider relaxing requirements that have to be fulfilled in order to prequalify for tendering; alternatively, some of these requirements could be included in the evaluation matrix.

- A more specific description of the bidder's security measures could be required.

5. Incoming control of delivered banknotes

The printers will perform quality control of production and finished banknotes according to the agreements. Nevertheless, it is recommended that some form of incoming control be performed by the RBM to control:

- *quantity*, if the number of banknotes delivered deviates from the number of banknotes agreed upon; and
- *quality*, if banknotes deviate from specifications or functionality and/or visually.

It is hardly feasible to inspect the entire consignment of banknotes that has been received. Consequently, inspection should be based on samples of banknotes. The sample of banknotes inspected may be examined visually, mechanically and/or in a laboratory. Usually, the contract with the printers contains several clauses related to the required incoming control and the printer's breach of contract. The RBM has to decide on the necessary level of incoming control and judge the need for contractual arrangements.

Quantity

Upon delivery, an inspection that confirms the correct number of cases is carried out. If the number of cases deviates from the agreed number, the printer's carrier and the printer is informed as soon as possible. Within a certain period of time, e.g., six months or a year, a certain amount of cases should be opened and the number of bricks counted. The RBM will have to decide the magnitude of the sample, taking into account the costs of the control and the risk of loss.

Quality

The functionality test is mainly a mechanical inspection by sorting equipment (BPS1000) to control machine readable features and to some extent the print quality. In the case of the Norwegian central bank (Norges Bank), at least 1.0% of the banknotes received are mechanically controlled. If one registers deviations, the magnitude of the samples is significantly increased. Both the visual and laboratory inspections are time consuming and should be based on a limited sample. Norges Bank practice entails samples of at least 0.1‰ of the banknotes received.

6. Estimating the need for cash

The RBM is responsible for the availability of a sufficient quantity of cash, and thus will have to estimate the demand for cash. Experience from other central banks underscores the importance of cooperation with the banks when making these projections. Cooperation is especially important when assessing changes in the banks' and end-users' behavior that affect the demand for cash.

There are numerous methods for estimating the demand for cash. The project approached the projections of future cash demand from both a micro (spreadsheet) and a macro perspective

(econometric model). From the micro perspective, the demand for each denomination at each depot would be considered. Short-term demand (up to 12–18 months) would be estimated with the aid of historical data and seasonal variations and trends.

Estimates based on the macro perspective cover the overall cash demand in the longer term (1–3 years). These estimates supplement the estimates from the micro perspective and are used in the planning of order volumes from the producers. Overall, the forecasting process provides a more thorough understanding of the mechanisms that affect cash demand.

6.1 Estimates based on the macro perspective

The explanatory variables for cash demand can be divided into three main groups: general macroeconomic variables, variables that express the competition between cash and deposits, and variables that may provide insight into the illegal economy. A newly developed model for cash demand in Norway shows that demand for cash is dependent on real consumption at the point of sale, bank interest rates and a negative linear trend that captures developments in the payment system, in addition to the historical value of real cash.

Macroeconomic models only provide information on aggregate developments in cash circulation. Moreover, such models increase the knowledge about the logistics processes and contribute to an improved understanding of factors of importance for cash circulation. Therefore, models with a macro perspective play a key role in the long-term planning for the procurement of notes and coins from external suppliers. In the case of actual orders, the model should be combined with spreadsheet-based micro models, where the distribution among different geographical regions and denominations is also taken into consideration.

6.2 Estimates from a micro perspective

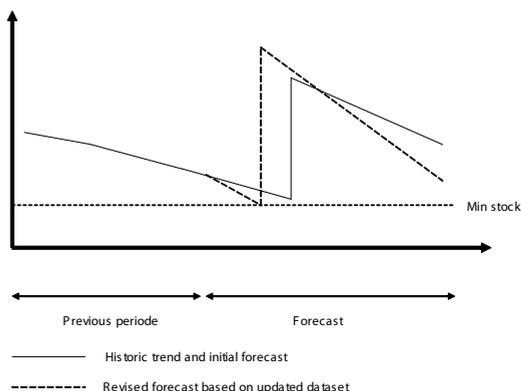
The handling of deposits and withdrawals and the sorting of notes and coins are major operational functions of the CMD. These are activities requiring appropriate accounting and stock systems. In the RBM, the accounting of currency activities relates to the whole process of recording daily currency issued for sorting, issuing to banks, and receipt of currency deposits from commercial banks, the RBM tellers and the Supervisor Sorting for sorted currency at the end of the day. It forms a “coordination hub” for all activities and all data collection. The data are compiled daily for computer processing in a stock system and transferred to the accounting system through an interface. Based on these data, reports from Midas,²⁹ and different spreadsheet applications are meant to be used to forecast the stock levels of the individual denominations at each depot and sub chest.

In the micro-perspective model, the demand for each denomination at each depot will be forecasted, to plan both orders from suppliers and internal transports. Basically, the demand for cash depends on the need to replace the amount of destroyed denominations of banknotes and

²⁹ The RBM’s Core General Ledger System; application for all transactions regarding deposits, withdrawals and holding of coins and banknotes.

coins and the change in external demand. The demand for replacement of destroyed denominations also depends to a certain degree on the RBM's clean note policy.

Based on data from the stock system, historical data and seasonal variations and trends, short-term demand (up to 12-18 months) could be estimated. Estimates should be made both for aggregates of each denomination and for the distribution among different depots. Typically, the output could be presented in tables and graphs. An example of a graph on stock levels could be:



Forecasts should be updated monthly from an updated dataset. As in the graph, revised forecasts include revised point of orders from the suppliers. These graphs, in combination with estimates based on the macro perspective, give the necessary information for ordering (time and volume) from suppliers of notes and coins.

7. Stock policy and ordering

The RBM's draft policy paper states that in order for the RBM to meet its mandate of supplying sufficient coins and banknotes to the general public, the RBM shall develop a well defined currency stock policy and a comprehensive database for monitoring and planning purposes. In light of the importance of a well-founded stock policy and the significant cost reductions that may be achieved thereby, the project presented a stock policy framework that is conducive to an appropriate level of operating inventories and a declining cost trend.

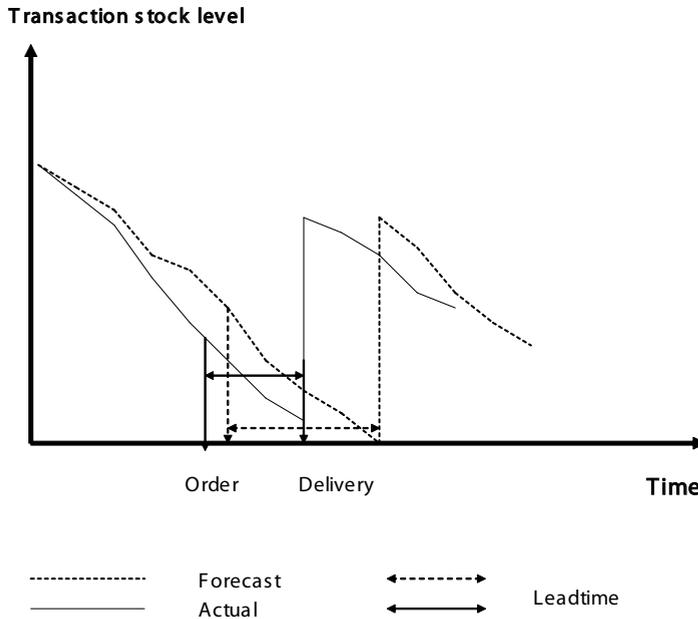
A policy for holding stocks of coins and banknotes within the RBM typically covers:

- transaction stocks decided by ordering policy;
- buffer stocks, or safety stocks, to buffer against uncertainty regarding demand for cash and uncertainty regarding supplier lead-time; and
- contingency stocks to meet extraordinary circumstances.

Transaction stocks

Transaction stocks serve to cover the expected requirements during the period between one delivery and the next from the producer. When a new delivery arrives, the transaction stock

level should be close to zero. The average level of the transaction stock is decided by the order policy—the size of the order and the ordering frequency—which is set to minimize the sum of order, transport and storage costs. See the graph below.



The graph illustrates a simple model that may be used to decide on the timing of an order. The initial stock level is set at the actual level at time $t=0$. The decline in stocks is estimated on the basis of the forecasts for future demand per denomination. The demand for cash depends on changes in external demand and on the need to replace destroyed/shredded denominations of coins and banknotes. To a certain degree, the demand for replacement of destroyed denominations also depends on the RBM's clean note policy. The need to supply (NS) to depot "i" if the stock level is to be kept unchanged, may be expressed as:

$$NS_{i,t} = W_{i,t} - D_{i,t} + S_{i,t}$$

where W_i is withdrawals from depot i, D_i is deposits in depot i and S_i is shredded banknotes in depot i. The actual development in the stocks is shown in the same graph, which provides the information needed to adjust the planned timing of new orders.

By minimizing total costs for ordering and for stockholding, and at the same time applying an acceptable risk for obsolete banknotes, one may determine the optimal order volume and subsequent magnitude of transaction stocks. In the case of the RBM, the following costs were identified and analyzed: unit costs, ordering costs, transport costs, and holding costs. Other stock-related costs are obsolescence and physical damage, which may be of particular relevance

due to the high stocks of certain denominations. If an upgrade of these denominations or a new family of banknotes had been considered necessary in the relatively near future, a significant proportion of the existing stocks of banknotes would actually have borne the risk of obsolescence. Holding costs for storage space, energy, handling, loss and administration may be considered to be relatively independent of the actual amount of coins and banknotes held in the vaults. As a result, these costs may not be included in the calculations of optimal order quantity.

Buffer stocks

Buffer stocks or safety stocks serve as a buffer, primarily against uncertainty regarding demand for cash during the lead time. This is referred to as service level or choice of supply capability, i.e. the probability of being able to meet demand for a denomination when the transaction stock approaches the level where it needs to be replenished and until a new consignment arrives. Uncertainty may also relate to timing and variation in lead time, both the delivery time agreed with the supplier and the time of transportation. Prior experience indicates that uncertainty related to supplier's delivery time seems to be limited and may therefore be disregarded. The same applies to transport of banknotes. Experience from coin transportation suggests that total lead time may be defined as the sum of the agreed lead time with the supplier and what seems to be the maximum time for the previous transports.

The size of the required buffer stocks depends on the expected variation in demand during the lead time and the required supply capability. Data for calculating the expected variation per denomination (coins and banknotes) have so far not been available. Assuming a normal probability distribution and with a standard deviation (SD) for a certain denomination, for different degrees of supply capability, the buffer stock (in units) may be calculated as:

Supply capability (%)	Buffer stock
80	0,84 SD
85	1,04 SD
90	1,28 SD
95	1,65 SD
97	1,88 SD
98	2,05 SD
99	2,33 SD
99,86	3,00 SD
99,99	4,00 SD

As shown in the table, the buffer stock increases exponentially with the required increase in supply capability. Accordingly, the cost of holding buffer stocks for different supply capabilities may be calculated by using the above table.

Failure to meet demand involves reputational risks, and this may be an argument for applying a relatively high supply capability. As illustrated in the table, a high supply capability requires high buffer stocks and consequently implies high costs. One has to weigh the aim of high supply

capacity against the aim of reducing costs. This may be regarded as a core policy issue, which ultimately should be decided by the Board of Directors.

During normal circumstances, the main aim of stock holding may be expressed as minimizing overall order, transport and storage costs in addition to setting targets for supply capability. In addition, there may be a need for emergency stocks in case of extraordinary circumstances, e.g. failures or disturbances in key public infrastructures (electronic payment systems), the need to replace one denomination with another due to a high number of counterfeits or, as could be the case for Malawi, serious problems in the agricultural sector due to poor harvests. The size of emergency stocks that the RBM wants to hold in order to handle extraordinary situations will be determined by the level of risk the RBM is prepared to take.

8. Processing policy

With a revised division of responsibility between the RBM and the banks, the latter would be responsible for sorting banknotes into fit and unfit before they are deposited in the RBM and prior to redistribution over the counter and through ATMs. Like all other central banks, the RBM would remain responsible for destroying unfit and counterfeit notes. Moreover, the RBM should consider control through sampling the sorting performed by the banks. The banks' increased responsibility for sorting would encourage at least the major banks to invest in infrastructure and competence.

In order for the currency to function well as a mean of payment, the average quality of the banknotes in circulation should reflect the way the banknotes are used and how they are circulated. The quality required in countries where banknotes are widely used in ATMs and other automated deposit or withdrawal machines is different from the quality required in countries where banknotes are only used for manual transactions. The quality of banknotes in circulation is a key responsibility of a central bank. The primary means of influencing the quality is setting the definitions for fit/unfit banknotes (Clean Note Policy). This policy should be distributed to those that do the sorting and the central bank sorting machines should be adjusted accordingly. If the circulation pattern changes, the fit/unfit limits need to be adjusted.

The project recommended that, for an intermediate period at least, the RBM should provide sorting services for the banks. A price should be set on the services and a gradual implementation of cost-based pricing of the RBM's sorting services was recommended. With respect to price-setting, the RBM could consider:

- setting the initial pricing at a relatively low level to avoid creating obstacles to the implementation of the new distribution of responsibility between the RBM and the banks;
- operating with the initial relatively low prices until the banks have been able to develop the necessary competence and infrastructure;
- operating with a level of cost-based prices that in the long run encourages the banks to perform the sorting themselves; and
- including clauses in the “customer” agreements that allow for changes in prices without too much delay.

9. Issues related to the central bank's internal currency processing

Destruction

Destruction of banknotes is a vital task for a central bank. Routines must be in place to ensure that no counterfeits are being destroyed as genuine banknotes. These routines include defining and setting the sensors on the sorting machines. Manual destruction of rejected banknotes and denominations require solid routines and highly skilled operators who are capable of recognizing counterfeits. Keeping up with developments in the quality of counterfeits requires the existence of appropriate training programs.

Set up of banknote sorting machines

The RBM has a BPS1000, BPS200 and ISS300 for sorting and destruction of banknotes. The importance of setting up the machines and testing the machines on a regular basis was addressed. The main objectives are to:

- Verify that the machines are set up according to the Clean Note Policy and internal regulations for quality sorting. Small variations in the setup of the machines can result in incorrect sorting which again can increase the costs of producing new banknotes.
- Verify that all authenticity sensors are working according to the original set up.
- Ensure that the sorting machines are cleaned and serviced on a regular basis. If the sorting machines' performance gets worse gradually, it may be difficult for the operator to notice. Therefore, some regular follow-up routines should be in place.

Investing in new machine equipment

The RBM has acquired two new BPS 1000 processing machines to replace the old ISS machines. Issues that the RBM examined prior to the acquisition included the following:

- Based on its clean note policy and secure destruction policy, the RBM drew up machine specifications, including detailed sensor equipment. The objective was that the sensors should correlate to the actual machine readable features in the Malawian banknotes and to the new security features that RBM may introduce in the future.
- Realizing that upgrades that are performed at a later stage are usually very costly, the RBM conducted a detailed analysis that included expected future requirements in the machine specifications.

The service contract with the machine suppliers must reflect the internal know-how regarding the machines, the need for parts, etc. The RBM has worked out a policy and procedure manual for the CMD, which supports the operational activities. However, it is important to have an updated manual that covers all operational cash-related activities, and that describes the different routines in detail.

10. Clean Note Policy

In order to draw up a policy for the quality of banknotes in circulation, the following questions should be addressed:

What kind of banknote quality does the central bank want to offer to the banks and the public? What should be the average quality of banknotes in circulation?

- 1) What increase in currency purchasing costs is the central bank willing to accept to improve the quality?
- 2) What is the average turnover for each denomination? The definition of fit/unfit should correlate to the turnover since the definition of quality is average quality in circulation.
- 3) To what extent are the banknotes used in vending machines or other sensor related machines?
- 4) Which security features has the central bank defined as public security features? These securities features should be easy to detect on an agreed percentage of the banknotes in circulation.

On the basis of the policy decisions on the issues above, the central bank should be able to draw up its Clean Note Policy. Nonetheless, how to actually implement the approved Clean Note Policy will remain the main challenge.

Many central banks have established fairly concrete guidelines on how to sort fit/unfit banknotes. In some central banks, the guidelines mainly define fit/unfit banknotes for the banks' cash deposits at the central bank. In other central banks, the definition of fit/unfit banknotes aims at avoiding the reissuing of unfit banknotes by banks (or companies handling banknotes).

The definition of fit/unfit banknotes must reflect the country's economic situation and the Clean Note Policy established by the respective central bank. Some central banks assign priority to a high overall quality of banknotes in circulation, and accept only a low average number of unfit banknotes. For other central banks, this is not as important and/or may be costly to implement given the country's overall economic situation. When banknotes are widely used in vending machines, money automats for prepayment of tickets, etc., a relatively high quality of the banknotes in circulation is required if banknotes are to be an efficient means of payment. In countries with more limited use of such machines, the banknote quality may be of less significance.

The normal way of drawing up a Clean Note Policy is to define what the central bank considers to be the average acceptable quality of the banknotes in circulation. A simple method of defining the average quality is to perform a sample test of banknotes in circulation, and find the number of unfit banknotes based on predetermined sorting criteria or machine settings. The data provided by the SICDIAG in the BPS1000 will give quality results for each sorting criteria. Adjusting the central bank's fit/unfit definition will influence the quality of banknotes in circulation. The definition of a Clean Note Policy will have an impact on the need for new printed banknotes and thus, the central bank's currency management costs. In addition, the introduction of a Clean Note Policy will also require a review of the stock holding policy.

Since the Clean Note Policy is defined as the average quality of banknotes in circulation, the fit/unfit limits may need to be adjusted if the turnover of banknotes undergoes changes.

11. Other issues

Based on data from internal currency management systems and monetary and macroeconomic indicators, the production of regular reports (e.g., semi-annual or annual) on major developments in the currency area was proposed. In addition to serving as a useful tool to keep the staff of the RBM better updated on the underlying developments and trends, such reports could:

- generate more analytical reports on currency related issues, resulting in articles in the RBM quarterly bulletin and the annual report;
- strengthen the basis for the currency policy discussions of the Senior Management and the Board of Directors; and
- provide a better basis for the currency discussions with the banks, including the external Currency Management Committee which is chaired by the RBM and has representatives from the banks and the Bankers Association of Malawi.

Chapter VI Payment Systems

**Lenia Banda³⁰, Asbjørn Enge³¹, Fraser Mdwazika³² and
Kjetil Watne^{33 34}**

I. Background

The national payment system is a principal component of a country's monetary and financial system and, therefore, crucial to a country's economic development. The development towards a more effective national payment system can reduce overall transaction costs and expand the opportunities for commercial and financial transactions in an economy. The central bank is a core contributor to national payment system development. It generally plays a variety of essential roles in the payment system. It is an operator, an overseer of core payment arrangements, a user of payment services and a catalyst for system reform. Through these roles, the central banks acquire a broad perspective on the role of the payment system in the financial system and the economy, and an extensive expertise in specific payment systems. Central banks can therefore provide advice on payment and other financial system policy and act as an effective catalyst, together with private sector organizations, in initiating, promoting and contributing to payment system reforms.

Over the years, the Reserve Bank of Malawi (RBM) has received substantial technical assistance in the payment systems area. Major developments have taken place, and the Malawian payment system has overall been functioning relatively well. However, the formulation and implementation of the RBM's oversight role was not clearly defined and appropriate legislation was not yet in place. Accordingly, a main purpose of the technical cooperation program between the RBM, IMF and Norges Bank in the payment systems area has been to provide advice on the definition and execution of the RBM's oversight role. Particular emphasis has been placed on establishing and implementing the framework for the RBM's oversight role and functions, and on providing advice and guidance in connection with updating and revising the Vision and Strategy Framework for Malawi's national payment system.

³⁰ Lenia Banda was Director, Banking and National Payment Systems Department, Reserve Bank of Malawi, and is now Director, Administration Department.

³¹ Asbjørn Enge was MCM/IMF short-term expert, and is Assistant Director, Payment Systems Department, Norges Bank Financial Stability

³² Fraser Mdwazika is Manager, National Payment Systems Division, Reserve Bank of Malawi.

³³ Kjetil Watne was MCM/IMF short-term expert, and is Assistant Director, Interbank Settlement Department, Norges Bank Financial Stability.

³⁴ We would like to thank C. Sampic, MCM/IMF and staff of the RBM's National Payment Systems Division for helpful comments.

II. The payment system in Malawi

Financial intermediation in Malawi is dominated by the banking sector, which is supervised by the RBM. Cash remains the dominant mode of payment, but the authorities have in cooperation with the banks promoted the development of electronic interbank systems and systems for payment services. The main payment systems in Malawi are briefly described below. For more information, see the RBM's Annual Report on Payment Systems.

The Real Time Gross Settlement (RTGS) system

The RTGS system (MITASS, acronym for Malawi Inter-bank Transfers and Settlement System; previously called Perago RTGS) is a large-value interbank settlement system that enables processing and settlement of transactions in real time and on a gross basis. The system is owned by the RBM and technical administration is outsourced to Malswitch³⁵. In total, there are 14 participants in the RTGS system, comprising 11 banks, 2 discount houses and the RBM.

Chart 1: MITASS Throughput: 2002 – 2008

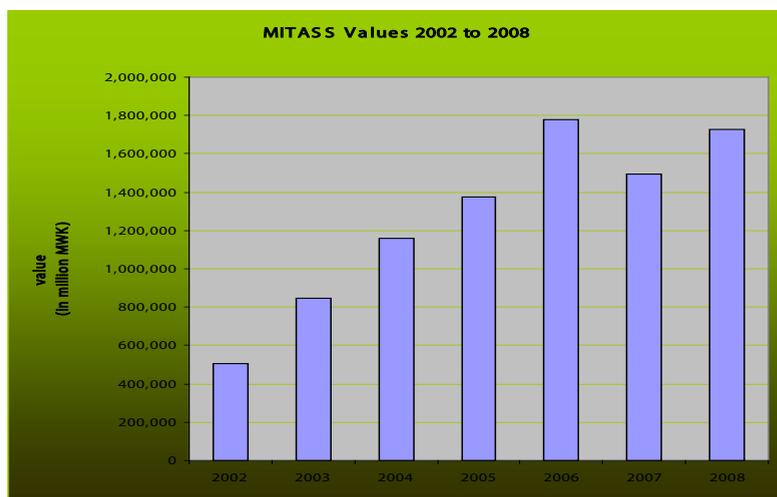


Chart 1 presents the trend of MITASS Throughput in the period 2002-2008. In 2008, 76 percent of the MITASS Throughput was due to single funds settlement instructions, while batch settlements from the Electronic Cheque Clearing House (ECCH) comprised 24 percent.

The Electronic Cheque Clearing House (ECCH)

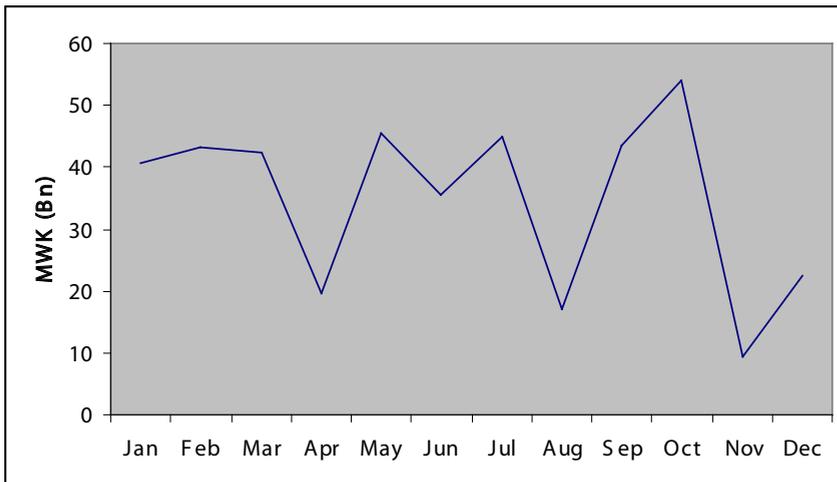
The ECCH is owned by the Bankers Association of Malawi (BAM), and technical administration is outsourced to Malswitch. The multilaterally netted positions from the check clearing are settled in the RTGS system once a day. In total, there are 11 participants in the check clearing

³⁵ Malswitch (Malawi Switch Centre) was established in 1999 to facilitate the introduction of electronic based payment products and services in Malawi.

system, comprising 10 banks and the RBM. The introduction of the ECCH, which is based on check imaging and truncation, reduced the clearing period from seven days to less than three days.

Chart 2 shows that the monthly movement of ECCH transaction values during 2008 was between K 10 billion and K 50 billion.

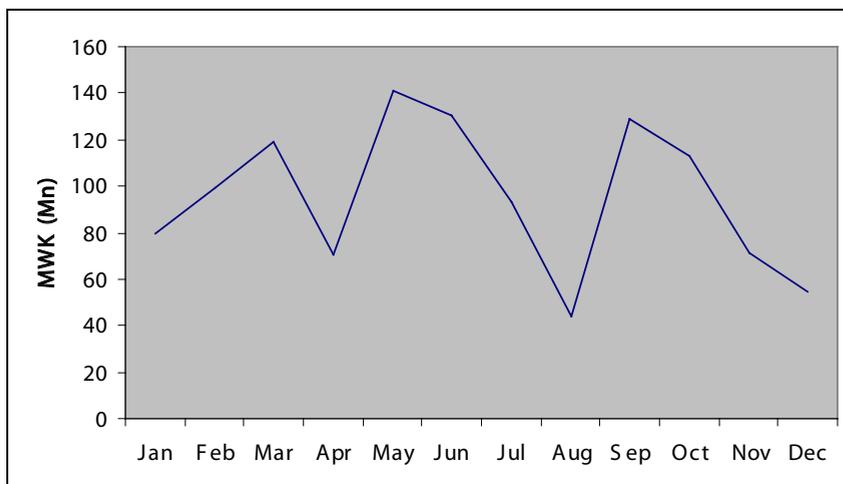
Chart 2: ECCH monthly values – 2008



The Smartcard System

Electronic payment cards (Smartcard) were introduced in 2002. The Smartcard is a plastic payment card with an embedded electronic chip, and the card comes pre-loaded. The cards can also be used at ATMs. The obligations between participating banks resulting from Smartcard transactions are settled in the RTGS system. There were five banks participating in the smart card scheme and approximately 429,601 cards issued as at December 31, 2009. As shown in Chart 3, during 2008 the value of Smart card transactions fluctuated between K 141 million in May and K 44 million in August.

Chart 3: Smartcard transactions – 2008



Automatic Teller Machines (ATMs)

A few banks have set up ATMs based on the capture of information in the magnetic stripe on bank cards according to the VISA standard. In total, there were about 194 ATMs in Malawi as at end-December 2008, of which 43 are smart card enabled.

III. Central Bank oversight

1. Objectives and principles of central bank oversight

The need for oversight

If money is to be an effective means of payment and financial markets are to function smoothly, safe and efficient payment systems are fundamental. A robust payment system is essential to financial stability. Banks' participation in the payment system exposes them to different kinds of risks and one bank's risk may be the source of more comprehensive systemic risk if the payment system is organized in such a way that the problems spread to others. This spill-over effect can threaten the stability of the financial system. The appropriate scope for central bank oversight of the national payment system depends on the extent to which the different systems have a significant effect on financial stability, i.e. their systemic importance.

International recommendations

The report *Core Principles for Systemically Important Payment Systems* (BIS/CPSS 2001)³⁶ describes ten core principles that apply to systemically important systems. The principles are

³⁶ Bank for International Settlement (BIS)/Committee on Payment and Settlement Systems (CPSS) Core Principles for Systemically Important Payment Systems (CPSIPS)

intended for use as universal guidelines to encourage the design and operation of safer and more efficient systems. The principles are relevant to emerging market economies and developing countries because of the efforts in these countries to develop and improve systems to handle growing payment flows. The BIS report also describes four responsibilities of central banks when applying the core principles.

The report, *Central Bank Oversight of Payment and Settlement Systems* (BIS/CPSS 2005) states among other things that central banks are responsible for oversight of payment systems as part of their core concern for financial stability and the safety of payment and settlement systems. Central banks should have both the authority and capacity to carry out oversight. Furthermore, it is recommended that oversight responsibilities, including objectives and standards, should be made transparent for reasons of consistency, effectiveness and accountability. Assessment of payment systems should be based on internationally accepted standards. The standards should be applied to all important systems in a country, including systems operated by the central banks themselves.

Legal framework

Although the oversight of payment and settlement systems is a core central bank activity, the sources of authority for this responsibility differ. Most central bank acts include a formulation about the central bank's responsibility to promote efficiency in the payment systems. During the last decade, it has become increasingly more common among central banks to adopt supporting legislation for the oversight of payment systems.

According to the RBM Act, one of the principal objectives of the RBM is to promote a sound financial structure in Malawi, including payment systems, clearing systems and adequate financial services. Given the recognition of the payment systems' significance for financial stability, a draft Payment Systems Bill was submitted by the RBM to the Ministry of Justice in 2002. However, the Payment Systems Bill was withdrawn during the second quarter of 2009 and is currently being reviewed.

According to the Banking Act, the RBM shall supervise the banks and financial institutions The Act also states that The RBM may issue directives pertaining to solvency, liquidity and sound operating practices of banks and financial institutions....

The formulations in the RBM Act and the Banking Act give the RBM responsibility for promoting robust and efficient payment systems and financial markets and hence, responsibility for overseeing the payment systems. The Acts may also give the RBM authority to issue directives and to regulate the national payment system. Nevertheless, the tools of the prospective Payment Systems Act would strengthen the effectiveness of the oversight.

2. Scope and organization of oversight activities

Normally, central banks concentrate their oversight activities on payment and settlement systems that are important for the stability of the financial system, the so-called systemically

important payment systems (SIPS). In practice, large value interbank payment systems are usually considered SIPS. Retail payment systems and securities settlement systems may also be regarded as such. Moreover, some central banks see the oversight of non-cash payment instruments, such as payment cards, checks, credit transfers and direct debits, as an integrated part of the oversight of payment systems.

In Malawi, the MITASS is considered to be a SIPS³⁷. The ECCH is the only major retail clearing system in Malawi and was also designated as a systemically important payment system. As a result, both the MITASS and the ECCH are overseen by the RBM and required to comply with the BIS CPSS SIPS Core Principles. Given the RBM's responsibility for the supervision of banks and other financial institutions, the scope for the RBM's oversight should also encompass the Smartcard system. In the proposed Payment Systems Bill, the RBM will be responsible for licensing and supervision of all payment systems in Malawi. Therefore, the RBM should also be prepared to oversee other payment systems.

The personnel involved in the oversight activities should have the necessary qualifications and skills. Experience in analytical work is a prerequisite. It is important to be able to draw on the skills and expertise of other departments of the central bank when the necessary skills are not available in the National Payment System Department/Division. Specifically, support is needed in the assessment of legal issues and for examining contingency solutions and operational risk. Thus, the establishment of an oversight committee in the RBM with members from the National Payment Systems Division and relevant departments has been recommended.

In principle, the responsibility of the RTGS system should be administratively separated from that of the oversight function. In some central banks, the units responsible for the two areas report to separate board members. Normally, the responsibilities are given to separate departments. In order to attain separation of responsibilities, the RBM moved the RTGS ownership from the National Payment System Division to the Banking Division in May 2009. Both divisions fall under the same department and report to the Director of the Banking and National Payment Systems Department. However, because the National Payment Systems Division is responsible for one of the RBM's core policy functions, the RBM is considering whether the division should be defined as a separate department.

3. The National Payments Council (NPC)

The NPC was established in 1993 to determine a common policy for developing the payment system in Malawi. The NPC is chaired by the RBM and is composed of all banks and the BAM, other financial institutions, service providers such as Malswitch and Malawi Telecommunications Limited, and the Government (Accountant General's Office).

The NPC currently has three permanent wings and various sub-committees that are working with specific projects. The three wings are the National Executive Committee, the NPC Steering Committee, and the NPC Secretariat. The National Executive Committee is chaired by the

³⁷ Systemically Important Payment System

Governor and is comprised of the chief executives of all NPC member institutions. The main responsibility of the National Executive Committee is to provide policy guidelines and direction for the NPS projects, and to provide funding and approve budgets. The NPC Steering Committee is chaired by the General Manager of the RBM and is composed of senior officials of all member institutions. The NPC Steering Committee's main functions are to consider NPS Project proposals, submit policy proposals and recommendations to the National Executive Committee for approval, and to implement approved projects and monitor progress. The sub-committees cover areas such as legal issues, standards/automation/interoperability and contingency framework.

In December 2008, the NPC established the Contingency Committee for Financial Infrastructure. The Contingency Committee is responsible for coordinating disaster recovery and crisis management issues. The committee is chaired by the Director of the RBM's Banking and National Payment Systems Department, with representation from the BAM, banks and other financial institutions, Malswitch and Malawi Telecommunications Limited. The Terms of Reference for the Committee comprise issues such as:

- Discuss and coordinate measures to prevent and resolve crisis situations which may cause severe disruptions in the financial infrastructure
- In a crisis situation, notify and inform relevant private institutions and authorities of status, consequences and remedial actions, and
- Coordinate other contingency issues, including organizing global testing of the business continuity plans both at the operators' level and participants' level.

The NPC has proved to be a very fruitful vehicle for collaboration between the RBM and the banking industry. In light of the clarification of the RBM's oversight responsibility, the framework for the RBM's relations with the banking industry and the mandate and membership of the NPC have been revised. The Terms of References of the sub-committees have also been changed and become more focused, reflecting the respective responsibilities of the RBM and the banks and the other stakeholders. In general, the banks are responsible for their own systems and the RBM is not supposed to control in detail the systems nor take over the operator's system responsibility. The RBM's main role is confined to oversight and to providing guidance and direction.

IV. Recommended oversight activities of the RBM

The RBM's key oversight activities may be categorized as monitoring, assessment and inducing change. How to implement an oversight framework for the RBM that is in accordance with international best practice was an important part of the payment systems project. The framework was based partly on the recommendations of the BIS in the report *Central Bank Oversight for Payments Systems* (May 2005), and partly on experiences from Norges Bank's oversight execution and framework.

1. Monitoring

- *Determine and describe the objectives and scope for oversight of payment systems.*

The first step would be to establish the objectives and scope of the oversight activities. The policy should be formulated by the department responsible for carrying out the oversight, and supported by relevant parties, both internally in the RBM and preferably, externally by the banks and their organizations.

- *Communicate the policy (objectives and scope).*

The objectives and scope of the oversight of payment systems should be discussed and approved by the Board of Directors, and the Ministry of Finance should be duly informed. The oversight policy should also be presented and discussed by the NPC to achieve the support of the banks. The final version of the oversight policy statement should be communicated externally, including on the website. In accordance with this, the RBM's Payment Systems Oversight Policy document was discussed by the NPC before it was endorsed by the Board of Directors in December 2007. The Policy document is available at the RBM website (www.rbm.mw)

- *Collect information about the designated systems.*

To exercise the oversight function, the overseer needs a good understanding of the different payment systems, how they relate to each other, and the roles they play in the overall financial system. The sources of information about the payment systems could include official documents and other publicly available information about the systems, statistics from the systems (values and volumes of payment transactions processed by the system (average and peak)), agreements between participants and the system provider and between the system provider and the unit responsible for the operation of the system, information about back-up solutions and contingency arrangements, and monitoring reports on the performance of the systems.

The initial assessment of the designated payment system would require an extensive collection of information. However, as a basis for monitoring the systems, the overseer also needs to collect information from the designated systems on a regular basis. The information should at least include volume and value of the payments processed, positions between participants and other information that could be used to examine the risks in the systems. The overseer should also request reports on interruptions in the operations of the systems and reports on testing of contingency procedures, and information on changes in the system or in the agreements concerning the system. The operators should be required to present an annual risk evaluation report. Statistics on the use of the payment systems could be a basis for further analyses and research on risk aspects and customer behavior. At least parts of the compiled statistics and other information should be presented and made publicly available, e.g. in an annual report on payment systems (see Section VI).

Formal legislative power that allows the RBM to collect the required information will not be in place before the Payment Systems Bill is enacted. However, the combination of its statutory responsibility for promoting sound payment systems and general power to collect statistical information should enable the RBM to perform a wide range of oversight tasks. Moreover, the RBM's Bank Supervision Department has responsibility for prudential regulation of individual

institutions, and explicit power to carry out supervision of individual participants in the payment systems. Cooperation and information sharing between the Banking and Payment Systems Department and Bank Supervision Department may therefore prove useful.

2. Assessment

Assess designated systems – evaluate whether they comply with the BIS Core Principles and other relevant requirements.

The payment systems information obtained by the overseer should be used to assess whether the system complies with the appropriate policy requirements and standards. For the systems defined as SIPS (MITASS and the ECCH system), compliance with the BIS Core Principles is mandatory. When it comes to other systems (the Malswitch Smartcard system), the overseer should in the short-term assess whether it complies with relevant requirements of the Core Principles. In the case of Malawi, additional requirements might be introduced when the Payment System Bill is enacted.

The overseer should encourage the owners of the private systems to make a self assessment of their systems. The self assessments should be used as a basis for the overseers' own assessment. Such self assessments would underscore the system owners' responsibility for the risks and efficiency associated with the operations of their systems, and would contribute to a better understanding of any changes and improvements that the overseer may consider necessary.

The RBM should monitor whether the operators of the ECCH and the MITASS have in fact conducted risk analyses and evaluate the results. The risk monitoring and analyses of the ECCH and the MITASS should be regarded as a core responsibility of the RBM. With regard to the Malswitch Smartcard system, the RBM should closely monitor progress in developing interoperability between the card schemes in Malawi. As long as interoperability and shared infrastructures are achieved, it will be largely up to the banks to make decisions on the technical features of the payment cards.

As part of the oversight activities, the designated payment systems should be reassessed on a regular basis, or when there have been major changes in the systems that influence the risks associated with the system, or when new international recommendations are issued. A reassessment should be executed approximately every second year, unless other factors indicate the need for more frequent reassessments.

In the payment systems project, an examination and assessment of whether the MITASS and the ECCH complied with the BIS Core Principles were undertaken. The assessments were based on what was assumed to be best practice, taking into consideration the overall environment for the relevant payment system. The assessments confirmed that the designated systems largely complied with the Core Principles; albeit some requirements were still pending.

3. Induce changes

After identifying shortcomings in a system, the overseer should consider available tools to induce necessary changes. Enactment of the Payment System Bill will provide the RBM with statutory powers to enforce the private operators of payment systems to make the required changes in the systems. Prior to that, the tools should range from moral suasion, discussions in an industry wide forum like the NPC, bilateral meetings with the party responsible for the relevant system, letters from the Governor or Senior Management of the RBM and recommendations in speeches, public statements and articles in relevant central bank publications. As a supervisor of the banks participating in the overseen payment systems, the overseer may also consider whether this provides statutory powers to induce or force changes to reduce risks or enhance efficiency in the payment system.

As part of its on-site oversight activities, the RBM introduced semi-annual meetings with MITASS and ECCH stakeholders. The meetings should be extended to operators of future systems.

The objectives and scope of the oversight, the compiled statistics and other information and the assessment of the designated systems should be presented and made publicly available, e.g. in an annual report on payment systems (see Section VI).

V. Vision and strategy for the national payment system

1. Background

The introduction of more market-oriented economic policies in many developing countries in the late 1990s, including Malawi, prompted the need for payment systems reforms. Payment systems reforms were considered necessary to enable the financial system to meet the requirements and challenges of liberalization. In order to increase efficiency in the way funds are transferred in the financial system, it became evident around 2000 that it was necessary to review Malawi's payment systems processes.

Central banks have often played a major role in payment systems modernization initiatives. This has also been the case in Malawi. The RBM has been involved in the implementation and, in some cases, operation of the systems. Since 2001, Malawi has made good progress in modernizing its national payment system, including the establishment of Malswitch, the introduction of the real time gross settlement system (MITASS) and the electronic check clearing house (ECCH). Over the years, the value of transactions processed in the systems has shown a marked upward trend.

When Malswitch was established in 1999 the main purpose was to facilitate the introduction of electronic based payment products and services in Malawi. Malswitch was established as a result of the NPC's vision of modernizing the payment systems and to implement a wide array of technological advances. In accordance with the 2001 Vision and Strategy Framework

document for Malawi's national payment system, which was drawn up by the NPC, the RBM provided the necessary initial funding for the Malswitch project.

Even though the NPC understood that running and managing a network switch was purely a business for the banks, the RBM decided to finance the project in order to serve the public interest and ensure that progress was made. It was emphasized by the RBM that Malswitch would eventually be turned into a private entity once it became fully operational. In the IMF's (MFD's) technical assistance report of April 2003, "Progress in Payment Modernization and Strengthening Monetary Operations and Banking Supervision", it was stated: "The RBM must be congratulated on achieving such rapid implementation of these technology-based systems and for assimilation by its staff of the new operational paradigms".

Malswitch has been operating a number of electronic payment systems. It houses and undertakes the technical support of the MITASS on behalf of the RBM, provides technical administration of the ECCH and maintains activities related to payments in areas of the Smartcard System, Electronic Funds Transfer (EFT) and the Electronic Bidding System (EBS). Malswitch's activities related to the MITASS and the ECCH system constitute a relatively small and declining share of its total business. An increasing share of the business activities has been related to its role as provider of a broad range of ICT services.

Malswitch was registered as an independent company in March 2006, and until 1 December 2007, the RBM owned 99 percent and the Government owned 1 percent. Although the RBM's ownership and participation in systems it oversees gave it some say in how the system is operated, it became increasingly clear that the RBM's role as both a majority owner of a commercial company and a public supervisor/overseer of a system the same company operates resulted in a blurred responsibility structure and led to conflict of interest. Moreover, given the different roles and objectives of a central bank and a commercial company, central banks often prove unable to act as professional owners of market-oriented companies.

Privatization of Malswitch remained the policy of the RBM, but potential investors were unwilling to offer a takeover price that the RBM considered acceptable in light of its substantial investment costs. However, in view of the conflicting roles as overseer and owner of Malswitch, 94 percent of RBM's shareholding in Malswitch was transferred to the Government as of December 2007. The Government in turn transferred the 94 percent to a Trust called the Malswitch Trust. Furthermore, in February 2008 the Governor relinquished his position as Chairperson of Malswitch's Board. The ultimate goal was to cede the operations of Malswitch to private hands by end-2010.

Since Malswitch concentrates nearly all the operational payment systems activities in Malawi, including the RTGS, Malswitch is given particular attention as far as risk management is concerned. In addition to overseeing the operations of the RTGS system and the individual designated systems, the RBM is also overseeing Malswitch's activities globally in order to check if the risk concentration is well managed. Moreover, the RBM is also considering organizing regular business continuity exercises for the RTGS.

2. The Malawi National Payment System vision and strategy framework, 2009-13

Malawi has made good progress with the modernization of its payment system, but not all milestones and objectives in the 2001 NPS Vision and Strategy Framework have been attained. A major challenge being faced by Malawi's national payment system has been the potential fragmentation of the payment system. In order to reduce the reliance on cash and increase the use of electronic payment systems and financial services, a number of initiatives have been proposed. In light of new developments in technology, banking and globally, the RBM and the NPC considered it necessary to revise and update the 2001 Vision and Strategy Framework document.

In order to draw up and formulate the National Payment System Vision and Strategy Framework for the period 2009-2013, the RBM established in collaboration with the NPC a Task Force to carry out the review exercise. The Task Force also reviewed the structure of the NPC. The division responsible for the oversight activities in the RBM provided secretarial support to the Task Force, which was headed by the Director of the Banking and National Payment System Department.

According to the revised and updated Vision and Strategy Framework document, a main objective of the future operation of Malawi's payment systems will be to maintain *a safe and efficient national payment system, in which interoperability of systems is attained and non-cash payment instruments gain increasing acceptability*. In order to attain this objective, oversight activities and risk control measures will have to be intensified and further efforts to formulate an appropriate legal framework that supports adoption of a modern payment system will have to be made. The envisaged national payment system will have the following general attributes:

- Cost effectiveness
- Timely availability of funds to participants
- Enhanced security, reliability and efficiency of the system
- Sound legal framework with a high degree of certainty
- Informed and educated system users and service providers
- Interoperable systems (based on common standards)
- Fair and equitable competition among providers of payment services

A major role of the RBM will be to ensure that the systems are operated according to internationally accepted best practices. It will be mandatory for all designated systemically important payment systems to comply with the Core Principles for Systemically Important Payment Systems (CPSIPS). Non-systemically important payment systems shall be expected to observe the relevant risk reduction principles. The RBM will also be involved in operational aspects of the RTGS system (MITASS) and act as a catalyst for payment systems development. In addition, a change in the division of responsibility between the RBM and the banks with regard to cash supply functions is under consideration. Such a revision would contribute to more cost-effective currency management and a more efficient payment system.

The framework identifies a number of present and future requirements for achieving the vision. It draws up the main strategies to be adopted over the next five years and presents a timeline for the implementation. Since the main strategies are formulated in relatively general terms, the actual strategy implementation will require formulation of specific and sequenced plans and involve different stakeholder groups. These plans should be discussed and followed up by the industry wide forum (NPC). The monitoring and assessment of the strategy implementation should be published by the central bank, i.e. in the RBM's Annual Payment Systems Report.

The following strategic payment systems areas have been prioritized in the document for the National Payment System Vision and Strategy Framework 2009-2013:

- Legal framework
- Interoperability
- Role of the national switch
 - Credit card clearing
 - Payments at point of sale
 - Automated credit transfers
 - Automated debit orders
 - Internet banking
- Availability of payment products and services
- Branchless banking
- Straight through processing
- Delivery versus payment
- SWIFT platform
- New technology
- Malswitch
- Government involvement
- Oversight of payment systems
- Risk management
- Contingency committee on financial infrastructure
- Public awareness
- Regional integration
- Structures of consultation
- Capacity building issues

In the following sections, further comments and recommendations are provided on some of the strategies listed above.

Legal framework

It is essential to ensure that the operations of the national payment system and oversight activities have a sound legal basis. Hence, in Malawi it is imperative that the Payment Systems Bill is promulgated. In the same vein, the Securities Act and the Bills of Exchange Act are also of major importance for the payment systems and financial system in general. The judicial void

created by these delays could be prejudicial to the oversight activities of the RBM, the stability of the financial marketplace and investor confidence in Malawi.

Interoperability and role of national switch

The CPSS report *Policy issues for central banks in retail payments* (March 2003) states that common standards and practices may have a crucial effect on the pace and direction of innovation. A particular new payment service may be of comparatively little value to the end user as long as payments can be made and received with only a few counterparties. The value of the payment system grows as the number of potential counterparties rises. The CPSS report *General guidance for national payment system development* (January 2006) identifies, among other things, standardization of instruments and interoperability of networks as important approaches to expanding user access to retail payment instruments.

The Malawi Vision and Strategy document underscores that interoperability of ATM and POS devices should be achieved within end-2009. All payment facilities to be introduced or imported in Malawi shall conform to specified industry standards so that interoperability is attained. It is stated that implementation of a national switch is important to achieve interoperability across all card payment systems. In this context, issues related to credit card clearing, payments at point of sale, automated credit transfers, automated debit orders and internet banking are addressed.

The banks should be encouraged to cooperate in setting up and maintaining the payment infrastructure, while competing on service delivery channels. The strategies aimed at achieving interoperability and satisfying the different requirements include:

- Interoperability based on common standards. Establish a common switch/clearing house for clearing of different types of payment services. The progress of the Malawi NPC's ATM Interoperability Sub Committee's work is commendable, and a successful implementation is critical for the development of electronic payment services and reduced reliance on cash.
- Develop a system for card payments at point of sale (EFTPOS) based on existing payment card schemes and open to all banks operating in the country.
- Introduce automated credit transfer system for salary and pensions processing (using Electronic Funds Transfer (EFT)) for government, corporations and private entities.
- Encourage financial institutions to increase, within an agreed time frame, access to payment services (e.g. by increasing branch network), and to introduce more payment products and services into the market (e.g. more ATMs).

The Smartcard technology, coupled with biometrics, provides advantages related to level of security and facilitates access into areas without telecommunication coverage. On the other hand, the costs are significantly higher than a magnetic stripe solution and may seem unaffordable for the average person in Malawi. As long as interoperability is achieved on e.g. ATMs and POS terminals and the systems comply with the RBM's required oversight standards, the choice of card technology should be left to the banks.

The expansion of electronic payment services should be based on sound commercial and financial considerations, and the implementation of a national switch should largely be handled by banks. However, in order to increase the access to payment services, it is essential to increase the access to bank accounts and create incentives for banks to share the costs of developing the infrastructure for ATM and POS devices. In this context, prices for payment services will become an issue, and the banks will have to consider introducing fees. Experience and model solutions from other countries in the region may provide useful lessons and guidance in this connection.

Malswitch and location of MITASS

In the 2009 Vision and Strategy document, it is recommended that Malswitch presents a comprehensive business plan that draws up a strategy that ensures viable operation of Malswitch and facilitates privatization by end-2010. New shareholders could be introduced through the buy-out of existing shareholders and/or the issuing of new shares to increase equity. To reach a positive outcome to the privatization process, the technical cooperation payment project recommended that a significant part of the RBM's funding of the Malswitch project be regarded as sunk cost (public good). It was also pointed out that in some countries, companies owned by the banking industry are responsible for processing payment transactions and settlement systems. Given the business activities of Malswitch, the banks in Malawi might constitute a potential takeover group. It was underscored that Malswitch's prospective operations and investment strategies should be motivated solely by business and financial considerations.

When the banks become responsible for their own systems and achieve interoperability between the systems, Malswitch's business model may be defined as service provider for the banks (ECCH, and e.g. as operator of the national switch) and possibly also for the RBM (MITASS). Malswitch has delegated the issuance of the Smartcards to the financial institutions that subscribe to it, and may as an operator of the national switch also become a service provider for other card issuers.

The RBM has received various recommendations from previous payment system experts to shift the MITASS back to the RBM. It is, inter alia, argued that outsourcing of the MITASS constitutes a risk, and that the operation of the system is typically considered to be a function of the RBM. In most countries, the services provided by the RTGS system are the responsibility of the central bank. Normally, the RTGS system is operated on the central bank's own premises and by its own staff. However, an increasing number of central banks are considering alternative solutions for the operation of their ICT systems, including the RTGS system. One option is outsourcing.

Even if the ICT operation of the RTGS system is conducted by an external entity, the actual processing in the system will remain the responsibility of the central bank. The advantages of outsourcing are among other things that a company with ICT operations as its core business may be in a better position to attract, develop and engage qualified personnel, to take advantage of new technology and to introduce risk reduction features in the operation. A specialized ICT company may also to a larger extent be able to take advantage of economies of scale. An RTGS

system is a relatively limited application to run, even if the surrounding systems that are connected to the RTGS system are taken into account.

Operational best practice depends crucially on the organization's approach to producing services. A basic choice is between managing production operations in-house versus outsourcing to third-party business partners. Outsourcing of production, especially production of technology-intensive services, may yield significant benefits such as enhanced flexibility to continually upgrade performance, security, and user experience by providing reliable access to new technologies through the outsourcing business partner.

At the same time, outsourcing of ICT may pose unique risks that must be managed if the benefits are to be realized. The principal risk is the supplier's ability and motivation to provide ICT services at the required level. Managing vendor performance risk requires continuous hands-on vendor oversight. The aptitudes and skills necessary to manage in-house production as opposed to outsourced production are very different, and the organization must develop internal capabilities for vendor management. Especially in the case of ICT, retention or development of in-house capabilities that allow for informed evaluation of the vendor's application of technologies is essential. The retained technical capability in question is IT architecture and design.

The greatest disadvantage of outsourcing the RTGS system is that direct control of the actual operation will be out of the hands of the central bank. Hence, it is of crucial importance for a central bank with an outsourced ICT system to establish an adequate framework for monitoring and ensuring that the operations are carried out according to the requirements. The agreements that the central bank has with the ICT provider, including the SLA requirements, are vital parts of that framework. The frequent reports by the ICT provider covering the ICT operation of the system and adequate structure and frequency on follow-up meetings are also important.

If the operation of the system is to be relocated to the RBM, there should be a simultaneous evaluation concerning replacing the hardware, migrating to a new version of the software and changing to SWIFT. Relocating the operations of the MITASS will require a medium-term strategy for upgrading of the technical infrastructure as well as the skills and competences at the RBM.

Delivery versus payment

Although the current routines for securities settlements do not pose significant financial stability risks, the lack of an automated system could constitute a hindrance for the development of the nation's securities market. According to the 2009 Vision and Strategy document, a full-fledged automated securities system shall be introduced in Malawi and interfaced with the RTGS to attain delivery versus payment within end-2012.

Government involvement

As a major participant in the payment system with a high volume/value of transactions, the Government could provide important contribution to achieving critical mass in payment

systems. The Government could play an important role in the modernization of the national payment system and contribute to a payment system that enables it to effect payments for various services in an efficient manner. An important goal is thus to reduce the Malawian government's reliance on cash and checks (salaries, agriculture subsidies, transfers to the poor, loans, etc.). At present, the Government, in cooperation with the banks and important system providers, is undertaking various pilot projects to support increased use of electronic payment instruments, a development which will also add to rural infrastructure.

One of the roles of the RBM is often to act as a banker to the government. In light of this, the RBM may play a more active role in providing advice to the Government on the best procedures for executing, clearing and settling retail payments through electronic systems.

RBM's oversight and supervision of the payment systems

As an overseer, the RBM shall ensure that all systemically important payment systems conform to the BIS Core Principles, and that non-systemically important payment systems adhere to internationally accepted risk containment principles. Accordingly, retail payment systems must comply with a harmonized set of oversight standards if a malfunction of these systems would seriously disrupt financial markets and/or the economy in general.

Moreover, the RBM will have an important role as catalyst and facilitator in the development of the national payment system. The implementation of the strategies will require discussions and approval of comprehensive project plans within the scope of the national industry-wide forum (NPC) and involve different stakeholder groups with varying approaches to reforms. While the NPC provides the forum for effective collaboration among the stakeholder groups – the central bank, as overseer of core payment arrangements, operator and user of payment services, important participant in the NPC and catalyst for system reform – will have to play an important role in the formulation and implementation of the future national payment system development.

Furthermore, the envisaged payment systems development in many developing countries will require intensified monitoring of issues related to interoperability and a national switch, e- and m- payment instruments (internet/cell phone banking) and cross-border payment issues, and ensure that acceptable standards are maintained. In the coming years, central banks, in cooperation with the banking sector, the national industry-wide forum and other relevant stakeholders, will have to examine the feasibility and monitoring of cell phone payments and banking services, and consider price systems that enhance the incentives that encourage banks to increase the number of ATM and POS devices. Since profit maximizing behavior may lead to too limited interoperability, some policy intervention may at times be justified. This would be in accordance with the central banks' objective to ensure efficient provision of payment services.

In the document, Oversight Policy for Payment, Clearing and Settlement Systems, the RBM has defined its oversight role with due consideration to the pending Payment Systems Bill. The document has been discussed by the NPC and was endorsed by the Board of Directors in December 2007. It assesses and formulates the RBM's objectives and scope of payment systems

oversight activities, and outlines the principles and techniques to be used to fulfil payment systems oversight objectives. Although promulgation of the Payment Systems Bill would have strengthened the RBM's oversight role and to a greater extent authorized direct intervention by the RBM, the policy document forms a good basis for a holistic implementation of the RBM's oversight role.

VI. Annual payment systems report

Statistics and other information about the payment systems are prerequisites for exercising the oversight function. Comprehensive payment systems information would also be of interest for the financial sector in general. Statistics on the use of the payment systems would facilitate further analyses and research on issues such as risk aspects and customer behavior.

In addition to general statistics and information on major payment systems developments, an annual report may present the objectives and scope of the oversight policy, address the overseer's views on payment system issues and the assessments of the designated systems. The outline and the content of an Annual Payment Systems Report for Malawi could be as indicated below.

- a) Introduction
 - Short summary of the purpose of the report and the current status and future vision of the payment systems in Malawi, by the Governor
- b) The objectives and scope of RBM's payment systems oversight
- c) Presentation of the payment systems in Malawi, including;
 - The most important systems: RTGS, ECCH, the Malswitch Smartcard system, the ATM network, securities settlement systems, etc.
 - The different players in the payment systems: the RBM, the banks, Malswitch, customers, etc.
 - Presentation of a typical payment cycle.
- d) Statistics from the payment systems, including
 - Values and volumes processed in the payment systems; RTGS, checks, Smartcards, ATMs, SWIFT messages etc.
 - Number of payment cards issued; including Smartcards, ATM cards, VISA and Master cards etc.
 - Number of ATMs in operation, number of POS terminals.
- e) Prices of payment services in Malawi, including;
 - Fees and charges for the use of the RTGS system
 - Fees and charges for the use of other payment instruments: checks, cards and ATMs
 - Etc.

- f) Presentation of the assessment of the designated payment systems in Malawi. Do the systems comply with the CPSS Core Principles, are there shortcomings? Including:
- The RTGS system
 - The check clearing system in ECCH
 - The Malswitch Smartcard system
- g) Cross-border payment
- Description of alternative cross-border services
 - Statistics of cross-border payments

In line with project recommendations, the RBM has issued comprehensive annual payment systems reports for 2007 and 2008. The 2009 report will be posted on the website in 2010. Future reports could also focus on improvements made and new risks identified over the preceding year, and state whether this has led to altered assessments. The monitoring and assessment of the national payment system strategy implementation could also be presented in the Annual Payment Systems Report.

Making the report publicly available would inform important stakeholders and the general public about the main developments in the payment systems area, provide system owners with incentives to undertake improvements as well as enhance transparency and accountability with regard to the different roles of the central bank which acts as payment system operator, participant and overseer.

Chapter VII

A Framework for Enhancing the Surveillance of Financial Stability

Snorre Evjen^{38 39}

I. Background

Over the past years, financial stability has emerged as an important public policy objective. A main role of the central bank is to contribute to maintaining the stability of the financial system. Many central banks have a mandate for surveillance of financial stability. In some central banks this mandate is explicit, while in other central banks it may be more implicit. An increasing number of central banks are publishing financial stability reports (FSR), but until now only a few African central banks, e.g. the Reserve Bank of South Africa, the Bank of Ghana and the Bank of Mauritius, have published FSRs. Following the global financial crisis and the increasing emphasis on financial stability issues, central banks' work in this field is likely to evolve further in the coming years.

Malawi's financial system is relatively small, even in a regional context, and bank-dominated, but it has a variety of institutions and markets. The financial system consists of eleven banks, two discount houses, one leasing and finance company, eleven life and non-life insurance companies and an emerging bond and equity market. A number of partly government-sponsored development finance institutions that are focusing on the financing of agricultural production for low-income groups in rural areas, small-medium sized enterprises, micro credits, etc. complement the banking system. Moreover, private pension funds, managed by life insurance companies, constitute an important financial sector component.

According to the Reserve Bank of Malawi (RBM) Act, one of the principle objectives of the RBM is to promote a sound financial structure in Malawi, including payment systems, clearing systems and adequate financial services. Furthermore, the RBM's mission reads as follows: "To achieve price and financial stability to contribute towards national economic growth and development". Thus, monitoring financial institutions, securities markets and payment systems in order to detect trends that may weaken the stability of the financial system must be regarded as a core activity of the RBM.

³⁸ Snorre Evjen was MCM/IMF short-term expert, and has been Acting Director, Financial Markets Department, Norges Bank Financial Stability.

³⁹ We wish to thank Sean Craig and Jan Vlcek of the MCM/IMF, Neil Nyirongo, Executive Director of Economic Services, Director Efford Goneka, Senior Economist Rodgers Chawani and other staff of the RSD, staff of the National Payment Systems Division, Tobias Chinkhwangwa, Executive Director of Supervision of Financial Institutions and staff of the functional area of Supervision of Financial Institutions for helpful comments.

Although financial stability is explicitly included in the mandate, the RBM had not yet developed a comprehensive framework for macroprudential surveillance. It was therefore decided that advice would be given on how to implement a more comprehensive framework for financial stability analysis. The focus was on establishing a framework for financial stability reports, both the process of production and the content of such reports. Organizational issues and crisis resolution issues were also addressed.

The main purpose of the first project visit on Financial Stability⁴⁰ was to review the statistical material and economic, monetary and payment systems information that were available to carry out the financial stability analysis for Malawi, and in cooperation with the RBM to draw up a suitable framework for the preparation and drafting of regular financial stability reports. The main purpose of the second project visit was to review the RBM's draft pilot FSR and provide advice on ways to strengthen the analytical framework and develop the financial stability analysis further. The RBM's first FSR for external publication will be discussed by the RBM's Monetary Policy Committee in May 2010, and will thereafter be issued for external publication. Future FSRs will be issued semiannually.

II. Purpose of financial stability reports

In view of the importance of financial stability for the overall objectives of a central bank, at least in a medium-term perspective, the choice is not really whether or not to produce such a report, but rather over the scope and resources allocated.

Based on a survey, Cihak (2005)⁴¹ discusses the main reasons for publishing FSRs. The main objective seems to be to contribute to financial stability, although publication of FSRs is only one of a number of tools that authorities may use to impact financial stability. FSRs can affect financial stability by:

- Improving the understanding of and contributing to a dialogue on risks to financial intermediaries (in the financial sector and among users of financial services)
- Encouraging an informed debate on financial stability issues
- Alerting financial institutions and market participants to the possible collective impact of their actions
- Building consensus for financial stability and the improvement of financial infrastructure
- Contributing to transparency. Publishing a FSR conveys that the central bank is taking its mandate seriously, thoroughly analyzing the financial system. It may also clarify the central bank's role in protecting the stability of the financial system
- FSRs may also be a tool for encouraging greater cooperation between authorities. For instance, in Norway the FSRs are discussed at meetings with both the supervisory authority and the Ministry of Finance (MoF).
- Helping to mitigate identified risks by suggesting changes in the macroprudential framework.

⁴⁰ Mr. Evjen's two project visits were conducted in January and October 2009.

⁴¹ Cihak, Martin: "How Do Central Banks Write on Financial Stability", IMF WP 06/163, 2005.

III. Definition of financial stability

As a starting point for analyzing financial stability, central banks should have a definition that is understood and agreed upon. The many different definitions of financial stability adopted by the various central banks reveal that this responsibility is less clear-cut than the responsibility for monetary policy in inflation targeting regimes, where an operational definition of price stability plays a key role in the framework. According to the definition of the Reserve Bank of South Africa:

“Financial stability is defined as the smooth operation of the system between households, firms, the government and financial institutions. Stability in the financial system would be evidenced by, firstly, an effective regulatory infrastructure, secondly, effective and well-developed financial markets and, thirdly, effective and sound financial institutions. In this pursuit of financial stability, the Bank prefers to rely on market forces and to only intervene if required to contain systemic risk”.

According to Norges Bank’s definition:

“Financial stability implies that the financial system is robust to disturbances in the economy and can channel capital, execute payments and redistribute risk in a satisfactory manner. Pursuant to the Norges Bank Act and the Payment Systems Act, Norges Bank shall contribute to a robust and efficient financial system. Norges Bank therefore monitors financial institutions, securities markets and payment systems in order to detect any trends that may weaken the stability of the financial system. Should a situation arise in which financial stability is threatened, Norges Bank and other authorities will, if necessary, implement measures to strengthen the financial system.”

By focusing on a range of indicators that reveal underlying developments in risks and exposures, the FSRs will provide assessments of financial stability trends, including warning signals of impending crisis. In addition to refine and extend the list of current indicators, and develop a broad range of financial soundness indicators, the RBM has adopted the following definition:

“The RBM considers financial stability as a condition represented by a strong financial system capable of withstanding shocks to the economy, one that is able to allocate savings into investment opportunities, facilitate the settlements of payments efficiently and manage risk in a satisfactory manner.”

Although the definition of financial stability may have an impact on the scope of the FSR, none of the FSRs surveyed by Cihak include an operational definition of stability. By focusing on a range of indicators that reveal underlying developments in risks and exposures, the FSRs will provide assessments of financial stability trends, including warning signals of impending crisis. In order to develop useful threshold indicators, the RBM will have to undertake major work to consider, refine and extend the list of indicators. Hence, the development of content and format for a prospective FSR will have to be a gradual process.

IV. What should be analyzed?

Each country must define which type of financial institutions to monitor because countries' financial infrastructures differ. However, banks play a key role in credit provision and payment services, and they differ from other financial institutions in that they rely on customer deposits for funding. Banks are thus important for financial stability in many ways. They also play an important macroeconomic role. If the banking sector does not function, it will have a large impact on credit distribution, reducing investments and economic growth. Therefore, banks are probably of more importance to financial stability than other financial institutions. However, life insurance companies are important too. As big investors in securities, their market risk exposure is often large, and they can be linked to banks in several ways.

Credit risk is the most important risk factor for most banks. Thus, assessing the financial fragility of banks' borrowers should play a prominent role in financial stability analyses. Both the household and the enterprise sectors should be monitored and their financial position and debt servicing capacity should be assessed. The larger part of banks' loan losses stem from the enterprise sector. However, household demand affects the profitability of enterprises and thus also the volume of banks' losses on loans to enterprises.

The functioning of payment systems should also be assessed in financial stability reports, especially in central banks which do not have stand alone reports on payment systems. It is important that clearing and settlement systems are designed to prevent the spreading of problems from one bank to another. In periods of financial turbulence, the design of systems is decisive even if payment problems do not arise. An identified contagion risk can then allow participants to limit their transactions, lending activity or use of payment systems in general.

Finally, financial infrastructure and regulation is of great importance to the stability of markets and economic developments. The impact of possible changes in financial regulation should be analyzed. Globally, financial regulation and macroprudential policy are likely to be discussed extensively in coming years. Recent events have exposed a gap in policy frameworks in many countries. Monetary policy was aimed at stabilizing inflation through balancing aggregate supply with demand. With the aim of protecting depositors, microprudential policy was focused on the regulation and resilience of individual firms. Neither policy focused explicitly on the build-up of financial imbalances. There is broad consensus that this gap needs to be filled by a macroprudential toolkit. There are many important dimensions of macroprudential policymaking which could address the resilience of the system as well as the build-up of imbalances both across the system and over time.

Through the Financial Sector Assessment Program (FSAP), the IMF has conducted analyses for financial stability in many countries, including Malawi. In the IMF's 2008 Malawi FSAP report, a number of issues of major importance for financial stability are addressed. According to the FSAP report, Malawi's predominantly private banking system is very well-capitalized, highly profitable and liquid; albeit some smaller banks display weaknesses. However, it was underscored that Malawi's financial system suffers from high spreads, low productivity and high costs,

resulting in limited outreach and product variety. Moreover, it was stated that structural measures to reduce costs are needed, while the expected consolidation may help create greater economies of scale. The analysis in the IMF's 2008 Malawi FSAP report has been a good starting point for the RBM's own analysis and further work on assessing the financial stability situation in Malawi.

V. How to analyze financial stability – some issues

1. Information needed

Assessing financial stability requires a broad set of information. It can be useful to divide needed information into two categories: regular economic/financial statistics and information collected by “market intelligence”.

In the case of Malawi, many useful reports in addition to the IMF's 2008 Malawi FSAP report are already prepared by the RBM. The departments of the RBM publish several reports that to a varying degree address issues of relevance for financial stability. Besides internal policy papers to the Monetary Policy Implementation Committee (MPIC) and an integrated policy paper to the Monetary Policy Committee (MPC), the RBM publishes the following external reports:

- Monthly Economic Review
- Financial and Economic Review (quarterly)
- The Central Banker (bi-annual)
- Report and Accounts for the year ending 31 December (Annual Report)
- Bank Supervision Report (Annual)
- Non-Bank Financial Sector Report (Annual)
- Annual Report on Payment Systems

At the RBM, the Research and Statistics Department (RSD) compiles and publishes financial statistics, describes and analyzes economic and monetary development and undertakes economic research, produces policy papers and provides secretarial services to the monetary policy committees. The National Payment System Division (PSD) has responsibility for the RBM's oversight and policy in the payment systems area, and will play an important role in the implementation of the National Payment System Vision and Strategy Framework during the period 2009-2013. The Bank Supervision Department (BSD) is responsible for on-site examinations, off-site examinations and for policies and regulations of banks, while the Non-Bank Financial Supervision Department (NBFI) has responsibility for the supervision of insurance and pensions, capital markets and micro-finance, and policies and licensing.

2. Data availability and indicators – databases

It is essential that the data used for financial stability analyses are collected and made easily available to all staff involved. Data should be organized and stored in a satisfactory manner so that vulnerability to personnel turnover is reduced. Organizing and managing a “Financial Stability database” must be assigned high priority so transparency of the analyses is secured

and different analyses using historic data may be undertaken. Central banks that consider producing financial stability reports could start by getting an overview of internally or externally distributed reports, and use these reports as a source of information about data-availability and useful indicators.

In order to map out available statistical material, analyses and reports of relevance for the financial stability reports, emphasis must be placed on issues such as:

- Exploring relevant statistics and other information to monitor the stability of Malawi's payment systems (financial infrastructure) and to detect potential risks, with focus on systems of systemic importance. Developing relevant payment systems soundness indicators.
- Exploring relevant indicators and other information to monitor soundness and profitability of key financial institutions and the functioning of the most important markets, and to detect risk factors to which banks and markets are exposed. Developing relevant financial soundness indicators.
- Developing relevant macro-financial indicators to monitor the overall outlook for financial institutions and financial markets in view of macroeconomic trends, and to detect potential risks.

While the availability of macroeconomic data typically used when assessing financial stability is somewhat limited in Malawi, as outlined in Section VII the available macroeconomic data combined with the prevailing data on financial institutions' balances and income statements provide a sufficient basis for producing regular reports on financial stability. However, the data were not always organized, updated and stored in a satisfactory manner, and the management and the organization of databases were therefore addressed in a comprehensive manner in another technical cooperation project (see Chapter XI). Furthermore, as new statistical indicators and information are introduced, the scope of the financial stability analyses may be gradually extended.

Macroeconomic data/information

The two RBM publications, quarterly "Financial and Economic Review" and "Monthly Economic Review", include data on some macro-variables of relevance to financial stability analysis, such as various money and credit series, interest rates, Malawi stock market index and commodity prices (tobacco, tea, sugar, coffee). Introducing forward prices of these commodities would improve the analysis by providing information about market participants' expectations. An FSR would be more interesting and useful if it, in addition to summarizing key developments, provided forward-looking analyses. Moreover, financial stress often evolves in the aftermath of longer periods of asset price inflation, and it would be useful to collect data on the commercial property markets. This could be data that cover office rental prices and possibly other indicators of the "temperature" of property markets. Data on profitability and solvency of the corporate sector would also be helpful. The financial position of enterprises is an important factor in assessing the quality of banks' loan portfolios and credit risks.

There was also a lack of data on household debt, interest expenses as a percentage of disposable income and house prices. However, in Malawi the household sector may not be of the same importance to the banks as in advanced countries, bearing in mind that bank financing of housing is relatively limited and that only a small percentage of the population has mortgages and bank accounts.

Data on performance of financial institutions

An important part of the data needed to produce financial stability reports will be found in the RBM's supervisory publications. The data compiled by the RBM's two supervision departments may, inter alia, throw light on developments regarding interest spreads, productivity and operating costs. The BSD's Annual Report contains relevant banking data, and provides information on banks' asset and liability structure. Analyses of the banks' profitability, return on assets and on equity, composition of the Income Statement, lending rates, non-performing loans, deposit rates and net interest margin are provided on a quarterly basis in the Annual Report. Regarding the banks' liquidity position, the BSD can provide data on liquidity ratios, such as liquid assets as a percentage of total deposits. The NBF's Annual Report presents data related to the life insurance sector, which plays an important role in the Malawian financial system. In addition, the NBF has provided life insurance sector data on assets to total financial system assets, composition of assets, buffer capital and number of insurance policies.

Bank Lending Survey

In addition to ordinary financial and economic statistics, central banks should increase their understanding of market developments. It is not enough to collect and describe data, it is crucial to also know the story behind the data. This can be seen as a quality check of the data. Direct communication with market participants is therefore needed. In particular, banks must be involved. Lending surveys are one source of information. A number of countries carry out bank lending surveys on a regular basis. The surveys have proved valuable during the present financial crisis, where the extent of credit squeeze has been a key issue. The main objective of such surveys is to provide qualitative information about the demand for and supply of new loans and the terms and conditions applied. This information cannot be extracted by merely following regular monetary and credit statistics.

Typically, lending surveys may indicate whether changes in credit growth are due to changes in the demand for or supply of credit. Furthermore, they may provide information about changes in banks' perception of risk and in their loan terms and conditions. During the project visit in January 2009, it was recommended that the RSD should introduce a regular bank lending survey as soon as possible.

The RBM has already introduced a Bank Lending Survey. The pilot survey was completed in the spring of 2009, and it was submitted to the banks in September 2009. The RBM will carry out such surveys bi-annually, in March and September, and will comment on the results in the subsequent FSRs.

The RBM's Bank Lending Survey is quite comprehensive and broadly in line with similar surveys of other central banks. According to the RBM's survey report, the main objectives of the survey are:

- to supplement statistics on credit market conditions in order to broaden the assessment of monetary and economic developments as an input into monetary policy decisions and financial stability assessments
- to enhance the assessment of the usage of private sector credit in order to ascertain whether the bulk of credit is being channeled to production or consumption
- to compile expected changes in credit conditions in order to enhance the precision of economic forecasts
- to bolster the assessment of systemic risk through acquisition of information regarding the bank's pricing of risk.

The Bank Lending Survey is based on the Bank of Uganda survey, and modified according to the specific features of the Malawian economy. Special features from the central bank surveys in Japan, USA and Norway have also been adopted.

The RBM's survey questionnaire contains both backward looking questions and forward looking questions. In total, there are 15 questions. The questions have been divided into credit conditions regarding households and enterprises. Some questions relate to demand-side developments, while others relate to supply-side developments, i.e. the respective bank's credit policies. For example, one question is "Please indicate how you expect your bank's credit policy, as applied to the approval of loans to corporations, to change?" When answering, the respondent is given 5 alternatives (Tighten considerably...Ease considerably). Moreover, the respondent must also differentiate between small/medium and large enterprises and short-term and long-term loans.

Such a survey will increase the central bank's understanding of the underlying financial developments, and should be regarded as supplementary information to the monetary and credit statistics. The possibility of asking occasional questions provides flexibility to address different interesting issues. The survey will not only serve as input to the monetary policy decision process, but also as input to the assessment of financial stability. The survey will contribute to making the FSRs more forward looking, as the banks provide information about their expectations on future credit policies and credit demand. The results of the survey should be distributed to the Senior Management and relevant departments shortly after the survey is completed. The timing of the surveys should be suitable for the FSR production process, ensuring up-to-date information.

Payment systems

The PSD compiles data on total value of transactions processed through the RTGS system (MITASS).⁴² These transactions include single transactions in the form of funds settlement

⁴² The Malawi Interbank Transfer and Settlement System (MITASS) is Malawi's Real Time Gross Settlement (RTGS) system.

instructions, and check and smartcard transactions that are processed in batches. The data series was labelled “MITASS Throughput”.

The RBM has designated the MITASS, the ECCH and to some extent the Smartcard (electronic purse) as systemically important payment systems in Malawi due to the high value and the time critical importance of the transactions processed by the systems. The RBM continuously monitors these systems’ performance in terms of availability to all participants. The RBM expects these systems to be available at least 90 percent of the time. The RBM provides data on downtime, which is a useful indicator for availability and stability of the payment system.

Regular meetings with market participants

In order to strengthen the understanding of underlying economic and financial trends, it is essential to establish regular meetings with relevant employees in some of the financial institutions (e.g. credit risk managers). The analyses of financial stability are enhanced by regular contacts with the banks and other financial institutions, and such meetings will support the knowledge about risks and developments in the banking industry. Several topics may be discussed in these meetings, such as macroeconomic risks to financial stability, the banks’ views on the financial environment, market developments, credit risk developments, payment systems developments, etc. However, it is desirable to separate these meetings from the BSD’s regular (on-site) supervision meetings. These already established inspections have a different purpose. Altogether, if a central bank wants to detect the risks ahead, it is necessary to understand how banks “think” and how they plan for the future. Looking only at financial statistics – often lagging far behind – is not satisfactory.

3. Stress tests and early warning systems

Many central banks (including Norges Bank) and financial supervision authorities have developed early warning systems for identifying banks that require increased supervisory attention. Early warning systems may be an important future tool for banking supervision and may complement the macroprudential analysis.⁴³ However, prioritizing the development of an early warning system was not recommended at this stage.

For the purpose of financial stability reports, and in order to be more analytical and forward looking, it was recommended that the RBM should establish a framework for stress testing of the financial results and capital buffers of financial institutions. Conducting stress tests is one of the preconditions underlying the Basel II capital adequacy requirements. In Malawi, the Basel II requirements for banks will be implemented by 2012.

A number of stress tests were performed by the IMF during the Malawi 2008 FSAP. Currently, the RBM does not conduct stress tests. In the project, the RBM was advised to consider how stress tests could become an integral part of the banking supervision function. While stress

⁴³ See for example Andersen, Henrik: “Failure prediction of Norwegian banks: A logit approach”, WP 2/2008, Norges Bank

tests are of particular importance for the surveillance of individual banks, the results may also be integrated with the macroprudential analysis and provide valuable input to the FSRs.

There are several ways of conducting stress tests. In some central banks, e.g. Norges Bank, stress tests are built on worst case macroeconomic scenarios, using a macroeconomic model which is connected to a bank satellite model. These models are normally developed over several years, using empirically estimated macro-relations. At this stage, the Norwegian methodology would not suit the RBM as such an extensive macro model does not exist. Building such models demands long data series on a large set of variables. In a long-term perspective, and if the RBM develops its own macroeconomic model, the RBM can proceed along the same lines.

Another approach would be to perform more direct stress tests of the banks' balance sheets and profit and loss accounts. This would be more in line with the stress tests performed by the IMF in connection with the Malawi 2008 FSAP. The IMF performed a number of stress tests in different categories of risk, i.e. interest rate risk, exchange rate risk, credit risk and liquidity risk. Stress tests were performed both with narrow assumptions (such as an isolated change in the exchange rate) and with composite shocks such as a combination of drought, falling tobacco prices, exchange rate depreciation, rise in interest rates and drops in foreign exchange trading income.

The RBM was advised to draw up a plan for the work on stress tests and its ambitions in this field, and recognize that stress testing is resource intensive. For instance, the RBM could attempt to reproduce the simpler versions of the IMF tests with isolated changes on updated data. Gradually, more complicated stress tests could be performed. It is important to note that stress tests do not need to be complicated. Overly complicated stress tests can turn the results into a "black box".

Developing a toolkit for stress testing or an early warning system is very resource demanding. Central banks must recognize that developing a complete model framework for stress testing probably will take years. For that reason central banks must assess whether they want to develop economic models for stress testing. Moreover, there are many different modeling approaches that can be used.⁴⁴

VI. Framework for financial stability reports

1. Internal issues

The internal allocation of responsibilities for financial stability issues is briefly described in Section V. The RBM has decided that the RSD should be the lead department at least initially, but that in the longer term the BSD might be the lead department. A Task Force has been established, consisting of economists from the four contributing departments (RSD, BPSD,

⁴⁴ See Bårdsen, Gunnar, Kjersti-Gro Lindquist and Dimitrios P. Tsomocos, "Evaluation of macroeconomic models for financial stability analysis", WP 1/2006, Norges Bank

BSD, NBF; approximately 8 persons). The Task Force has meetings during the production process of the FSR, and a few of the Task Force members will conduct meetings with some banks and other financial institutions in connection with the preparation of the FSR.

When producing a FSR, it is essential to draw up a detailed plan for the entire production process. This entails a detailed timetable with strict deadlines in place. A possible timetable for the production process of a FSR could be:

Week 9	- Kick off meeting of the Task Force – Mapping out outline/content of the FSR - Consultation with Executive Directors of Ec. Services and of Supervision concerning planned outline/content
Week 7-8	- Drafting of the FSR according to agreed division of labor
Week 6	- Task Force meeting – presentations of the draft chapters
Week 5	- Re-drafting, and editing of the draft FSR - Editorial work
Week 4	- Submission of the draft FSR to Director, RSD - Director, RSD submits the report to BPSD, BSD and NBF for comments
Week 3	- Draft publication submitted to Executive Directors for Economic Services and for Supervision
Week 2	- Discussion of the FSR by Monetary Policy Committee plus copy to members of Monetary Policy Implementation Committee
Week 1	- Publication of the FSR

The timetable should be agreed upon by the Task Force and the management before commencing the production process, and should be followed strictly. If some layers of management are hindered from commenting within a deadline, the process should proceed without awaiting comments from the respective manager/leader (or be delegated to a subordinate). At Norges Bank, this process lasts around 10 weeks. The extra week reflects performance of quite time consuming stress tests and somewhat more extensive consultations with the governors and the Executive Board than suggested in the table above.

The draft FSR will be discussed by the RBM’s MPC, while the members of the MPIC will receive a copy for their information. In the report, it was recommended that the FSR should be included as a separate agenda item on the MPC agenda – and not under the same agenda item as the regular, integrated monetary policy paper. After incorporating the comments of the MPC, and endorsement by the Governor (or Governor designate), the FSR is ready for external publishing. The RBM is considering whether a “Financial Sector Management and Stability Committee” (FSMSC) should be established as a separate forum for supervisory issues. Until a decision to establish such a forum is made, the FSR will be discussed by the MPC.

The Task Force on financial stability will assign one of the senior (or principal) economists as Editor of the report. The Editor must be very hands-on during the production process. He/she must be given the authority to redraft the internal versions of the FSRs and to organize the work. The Editor will ensure that the written contributions are understandable to non-experts, that the report is of appropriate length, that the selected material is relevant, and that the flow of language is the same throughout the report. The Editor must also ensure that the authors and managers comply with the deadlines. Enhancing the flow of information within the Task Force and the other relevant participants is also a major task for the Editor. It is imperative that all members of the Task Force and their managers are well informed about the progress and status of the FSR. Accordingly, all participants should receive copies of the draft FSRs during the main phases of the production process.

2. Dissemination and communication

As in Norway, the RBM may consider submitting the internal version of the FSR to the MoF. In view of the participation of the Secretary to the Treasury at the meetings of the MPC and the Board of Directors, and the fact that the RBM's mandate includes supervision of financial institutions, the need for a joint RBM and MoF senior staff meeting on financial stability issues appears less evident.

The FSR may in some areas overlap other central bank reports, including the annual reports on supervision. Hence, it may be worthwhile to review the central bank's overall strategy regarding publications. For instance, only one annual supervision report for the financial sector may be issued, with focus on supervisory issues and without a section on macro prudential conditions.

A comprehensive strategy for the surveillance of financial stability also consists of a strategy for disseminating the analysis and communicating the outcome of reports. Many central banks have established press conferences on the day of publication as a routine. This is recommendable, as it is a good way of ensuring that the key message is spread to market participants and authorities and other targeted audiences. Presumably, and unfortunately, many of the targeted audiences are not reading the FSRs regularly. Holding press conferences is a good way of drawing attention to work on financial stability. This is best achieved when press conferences are headed by the top management of the central bank, assisted by the Executive Director in charge of financial stability. In its communication, it is important that the central bank explains the main risks and considerations, avoiding too much information and blurred conclusions.

In addition, it is recommended that the analyses and conclusions of the reports are presented to the public. In particular, one should present to financial market participants, market infrastructure providers and authorities in order to inform them and to have influence.

VII. Outline for a prospective financial stability report – case of the Reserve Bank of Malawi

Among the few African central banks currently publishing an FSR, the report of the Reserve Bank of South Africa is broad-based with comprehensive coverage of international macrofinancial developments. While the FSR of the Bank of Ghana mainly focuses on domestic, supervisory issues, the structure of the FSR of the Bank of Mauritius is more similar to the South African report; albeit less holistic on international developments. Since the Malawian economy is a much smaller and less open economy than the economy of South Africa, it was recommended that less emphasis should be placed on global economic developments. The IMF's publication, "Financial Soundness Indicators – Compilation Guide"⁴⁵, provides comprehensive guidance on concepts and definitions, and sources and techniques, for the compilation and dissemination of financial soundness indicators. Evidently, there are many ways to do this, and the structure of the report and relevant issues may vary from central bank to central bank.

The practice regarding date of issue for an FSR differs somewhat between the central banks. It was recommended that the date of issue for the FSR should reflect the month of publication, and not the period covered by the last data observations. For instance, a report published in June 2009 might be named FSR June 2009, although the last available data on banks' results cover largely the period up to March 2009. This will also distinguish the FSR from typical Annual and Quarterly reports, which usually describe what has happened during a given period. Inside the cover it should be noted that the report was based on information in the period up to (for example) May 17, 2009.

The RBM is planning to issue its first FSR in June 2010. The FSR is likely to be broadly in line with this sketch. The suggested indicators and charts were influenced by the availability of data during the project visits. Typically, new ideas will develop during the working process, resulting in a report that is of tangible use for the RBM as well as for Malawi in general.

A sketch of a prospective FSR was presented as shown below, including some relevant indicators.

Foreword by Governor/Deputy Governor

A few highlights regarding the situation.

Summary/Conclusion/Overview

- Key developments in the past 6 months
- Overall assessment – financial stability outlook
- Main risks to the financial system (the main source of risk in the Malawian banking systems is credit risk)

⁴⁵ <http://www.imf.org/external/pubs/ft/fsi/guide/2006/index.htm>.

Chapter 1. Macrofinancial Environment (or, Macroeconomic and Financial Environment)

This chapter should describe the environment in which the financial institutions operate. It should be both backward- and forward-looking, indicating projections of key variables and, if possible, include future prices of important commodities. The chapter may also point towards possible macroeconomic risks, which may represent a future challenge to the Malawian financial system.

International macrofinancial developments

- A brief summary of global developments
- Economic situation in the region and the Sub-Saharan Africa

Domestic macrofinancial analysis

- Real-economy developments, describing developments in GDP, inflation, commodity prices, etc.
- Financial market developments, describing developments in interest rates, money supply aggregates, credit aggregates, lending survey, stock market, exchange rate, etc.

Table 1. Some suggested indicators (Chapter 1)

<i>Indicator</i>	Responsible department	Comment
<i>GDP growth globally, historical and projected 2 years ahead, annual or quarterly data</i>	RSD	
<i>GDP growth Sub-Saharan Africa (or region), historical and projected 2 years ahead, annual or quarterly data</i>	RSD	
<i>GDP growth in Malawi, historical and projected 2 years ahead, annual or quarterly data</i>	RSD	
<i>CPI inflation, historical, quarterly or monthly data</i>	RSD	
<i>Banks' interest rate and lending rates</i>	RSD	
<i>Commodity prices (tobacco, tea, sugar, coffee), historical data and futures prices, if possible</i>	RSD	Futures prices not yet collected
<i>Corporate sector, return on equity</i>	RSD	Check data availability
<i>Total credit, in percent of GDP, historical data</i>	RSD	
<i>Currency in circulation, other money supply aggregates (M1, M2), historical data</i>	RSD	
<i>Stock market index, historical data, monthly or weekly observations</i>	NBFI	

Chapter 2. Financial Institutions

This chapter should provide an overview of the performance and risks of financial institutions. Assessing financial institutions' buffers against macroeconomic stress is particularly important.

2.1 Banking sector developments

This section should give an overview of the banks' activities and their exposures. Profitability, solvency, credit risk, liquidity risk (funding risk), market risk and solvency should be assessed.

2.2 Non-banking financial institutions

This section should address performance of life-insurance companies, pension funds and micro finance.

Table 2. Some suggested indicators (Chapter 2)

<i>Indicator</i>	Responsible department	Purpose
<i>Banks: Growth in assets, quarterly data</i>	BSD	Exposures
<i>Banks: Asset structure</i>	BSD	Exposures
<i>Banks: Liability structure</i>	BSD	Exposures
<i>Banks: Return on assets, Return on equity</i>	BSD	Profitability
<i>Banks: Composition of the Income Statement</i>	BSD	Profitability, vulnerability
<i>Banks: Operating expenses, in percent of total income</i>	BSD	Cost-efficiency
<i>Banks: Lending rates, deposit rates and net interest margin</i>	BSD	Profitability, vulnerability
<i>Banks: Core capital (Tier 1), in percent of risk weighted assets</i>	BSD	Solvency
<i>Banks: Total capital (Tier 1 plus Tier 2), in percent of risk weighted assets</i>	BSD	Solvency
<i>Banks: Equity, in percent of total assets</i>	BSD	Solvency
<i>Banks: Non-performing loans, in percent of total loans</i>	BSD	Credit risk
<i>Banks: Sectoral distribution of loans, in percent of total loans</i>	BSD	Credit risk
<i>Banks: Growth in lending, in total and by borrowing sector</i>	BSD	Credit risk
<i>Banks: Liquid assets, in percent of total deposits</i>	BSD	Liquidity risk
<i>Banks: Liquid assets, in percent of total deposits and short-term liabilities</i>	BSD	Liquidity risk

<i>Banks: Private sector deposits, in percent of lending to private sector</i>	BSD	Liquidity risk
<i>Banks: Wholesale funding by maturity</i>	BSD	Liquidity risk
<i>Life insurance industry: Assets to total financial system assets</i>	NBFI	Importance of life insurance industry
<i>Life insurance industry: Composition of assets</i>	NBFI	Market risk
<i>Life insurance industry: Buffer capital</i>	NBFI	Solvency

Chapter 3. Financial Infrastructure and Regulation

The purpose of this chapter is to give an overview of important structures and developments in the financial infrastructure, and relevant legislation for the financial sector.

3.1 Payment system overview and developments

One of the prerequisites for a stable financial system is a robust, sound and secure payment system infrastructure. The payment and settlement system is considered systemically important as it has the potential to become a channel through which financial risks can be transmitted across institutions. Thus, key developments in the payment and settlement system should be monitored. A short overview of the system may be provided in the first FSR. In subsequent reports, indicators of the stability and availability of the system may be reported.

Malawi's RTGS system, the MITASS, is regarded as a core component of the broader financial system since it provides the overall infrastructure for processing payments.

Some suggested indicators (Chapter 3)

<i>Indicator</i>	Responsible Division	Purpose
<i>Payment systems: Turnover values, MITASS</i>	PSD	Trends/stability
<i>Payment systems: Monthly downtime, MITASS</i>	PSD	Stability/availability of system

3.2 Legislative developments in the financial sector

The achievement of financial stability is dependent on a legal infrastructure that establishes a sound framework for financial institutions. This chapter should assess and give information on ongoing work regarding the legislation of the financial sector – where enactment of a number of bills of major importance for the financial sector is still pending.

VIII. Framework for crisis readiness and resolution

Issues related to crisis readiness and resolution were only partly addressed in the technical cooperation project on financial stability. Should a situation arise where financial stability is threatened, the central bank may have to supply extraordinary liquidity to individual banks or to the banking system as a whole. In principle, how to cope with a financial crisis has to be addressed both within a central bank and in relation to the MoF. Even if most foreign-owned banks operate as subsidiaries, crisis handling agreements with the relevant authorities in the banks' home countries may also be advisable.

In Malawi, the National Executive Committee of the National Payments Council has approved the mandate and composition of the Contingency Committee for Financial Infrastructure. The Committee is responsible for coordinating disaster recovery and crisis management issues, and will be chaired by the Director of the BPSD. With regard to handling and resolution of crises in the financial sector, it was recommended that the RBM should establish a specific contingency committee with instructions and procedures for handling of financial sector crises. Specific contingency arrangements should also be drawn up between the RBM and the MoF. Even though it may be difficult to foresee how a future crisis should be handled, it is useful to have reviewed in advance possible measures, procedures and rules for resolving a crisis in a financial institution, and the extent to which the arsenal of crisis handling instruments and measures will have to be reconsidered.

Chapter VIII

Liquidity Forecasting and its Role in Monetary Policy Implementation in Malawi

Morten Jonassen^{46 47}

I. Background

Liquidity forecasting is a crucial element of the implementation of monetary policy. In most cases implementation of monetary policy takes the form of establishing a level of short-term market interest rates that is consistent with the monetary policy decision. The short-term market interest rate is determined by the central bank's use of monetary policy instruments and the liquidity situation that is created, and the market's expectations thereof. Liquidity forecasting enables the central bank to decide on how much liquidity to provide to or withdraw from the market with the objective of smoothing undesirable fluctuations that could distort the implementation of monetary policy and result in excessive market volatility. It involves the centralization of a wide range of information on financial transactions which affect the main items of the central banks' balance sheet, including the sources of base money creation which are not under the control of the central bank (autonomous factors), and those which are under its direct control (policy position).

The monetary policy of the Reserve Bank of Malawi (RBM) aims to maintain low inflation, while providing room for adequate credit to the private sector and supporting reserve accumulation. Monetary policy is anchored in a target for Reserve Money (RM), which is the intermediate target. The operating monetary policy targets are Net Domestic Assets (NDA) and Net Foreign Assets (NFA). From the liabilities side of the central bank's balance sheet, RM is defined as commercial banks' deposits at the RBM plus currency in circulation. The target for NFA is formulated as a minimum level; with some provisions for downward or upward adjustment of the NFA target depending on exogenous shocks.

- When the RBM forecasts RM, it makes forecasts for the banks' deposits at the RBM and forecasts for currency in circulation. Changes in the banks' deposits at the RBM are defined as the sum of changes in the:
 - Net government position at the central bank
 - Net outstanding government securities
 - Net currency in circulation
 - RBM's foreign exchange transactions with customers (i.e. no policy transactions)
 - Maturing RBM market operations, and in principle the RBM's net operating costs

⁴⁶ Morten Jonassen was MCM/IMF short-term expert, and is Assistant Director, International Department, Norges Bank Monetary Policy.

⁴⁷ We wish to thank O. Nyawata, MCM/IMF, Director Jos-Milner of ECDM (former Manager, TRD), Manager M. Ngwira and other staff of TRD for helpful comments.

The main purpose of the liquidity forecasting exercise is to estimate the quantity of RM prior to possible RBM operations, and compare it with the RM target set by the RBM. Following such a comparison, the stance of monetary operations can be determined. However, the calibration of the RM target may be subject to errors that will necessitate interim revisions, and therefore also has implications for the deviation between outcomes and forecasts.

Before the technical cooperation program between the RBM, the IMF and Norges Bank, the RBM had two main routines for forecasting banking sector liquidity. Firstly, the RBM forecasted the banking system's same day closing reserve position. This forecast was published on the RBM website as "Daily Money Market Statistics". The purpose was to assess whether banks were likely to borrow at the RBM discount window (overnight borrowing facility) during the day. It also served as information for the banking system regarding their aggregate, expected reserve position at the end of the day.

Secondly, the RBM forecasted RM on a weekly basis. The forecasts were only made for the variables related to issuance and maturing financial instruments issued by the RBM or the Government. The total change in net government position (NGP), which takes into account both government revenues and expenditures, was not forecasted. The weekly forecasting table also contained historical, daily data for currency in circulation, banks' deposits at the RBM and actual and projected daily reserve money.

The RBM had also worked for some time on an econometric liquidity forecasting model for Malawi. In 2004-05, the IMF provided technical assistance to develop the liquidity forecasting capability of the RBM. The model consisted of five equations, among them equations for total government revenues and total government expenditures. The model proved, however, to have major definitional and econometric weaknesses as well as large forecasting errors. It was therefore decided to base the future liquidity forecasting exercise on a more judgmental approach. Since the RBM in practice did not make any forecast for the liquidity effects of government revenues and government expenditures, priority was given to establish a system to forecast the liquidity effect of government transactions, which are the change in the NGP.

II. Ways to improve the liquidity forecasting

Liquidity forecasting can be implemented by several methods. According to the IMF (2000)⁴⁸, central banks often use a combination of time series models, structural models and judgmental estimations in liquidity forecasting. In this project, priority was assigned to work on the development of a judgment-based estimation of liquidity, where the basic task was to get more and better structured information about government transactions. A necessary condition to succeed was that the government would cooperate closely with the central bank in providing on a timely basis all information available on government transactions that affect the liquidity supply.

⁴⁸ IMF MAE Operational Paper OP/00/7/Liquidity Forecasting, November 2000

Prior to 2006, the RBM had only to a limited extent utilized the information from the government budget and other information on government transactions when forecasting liquidity. Since the budget is often substantially revised during the year, it was judged to be too unreliable for forecasting purposes. Another reason was that the budget document only provides projections for the whole budget year. However, in the technical cooperation reports it was argued that more effective and creative use of the annual projections for domestic revenues and total expenditures, as presented in the annual government budget, would improve the forecasting procedures of the RBM. Moreover, it would be important to obtain and utilize knowledge about the procedures and practices for government transactions which determine the seasonal pattern. It was argued that the forecasting staff at the RBM should thoroughly document government transaction practices and be proactive in its search for information about future government transactions. The RBM should develop and use a spreadsheet model to collect and structure this information.

To obtain more accurate cash flow projections of government transactions on a more permanent basis, formal and informal communication channels between the relevant staff in the RBM and in the MoF have now been established. It is important that the Government provides on a timely basis all information available on government transactions that affect the liquidity supply. Providing such information should also be in the government's own interest, since accurate liquidity forecasts would facilitate implementation of government debt management policies.

When developing forecasts of banking sector liquidity, it is crucial to eliminate government transactions that do not affect the liquidity position of the banking sector. The forecasting staff must adjust government revenues for, e.g. grants in foreign currency, interest paid to the government's account in the RBM and a possible transfer of the RBM's net profit to the government. Government expenditures must be adjusted for, e.g. the government's interest payments on foreign debt.

When calculating the liquidity effect of changes in NFA, it is important not to include foreign exchange transferred directly to the RBM foreign exchange reserves, which is not traded against Malawian Kwacha (K) in the foreign exchange market. In Malawi, the correction for grants is especially important, as grants, e.g. in the 2005/06 budget year, were projected to amount to 44 percent of total government revenue. Grants/donor aid received in foreign currency by the government is a revenue source that does not withdraw liquidity from the domestic banking sector. However, when the capital is spent domestically, as government expenditure, it injects liquidity into the banking sector. This flow will be captured in data for government expenditures.

III. Framework for judgmental liquidity forecast approach

In most central banks the quality of the liquidity forecasting is contingent on extensive use of the government's projections of its revenues and expenditures, and a judgmental evaluation of these projections and of possible changes in the government's daily payment patterns. This is useful to structure in a large liquidity forecasting spreadsheet. A major part of the technical

cooperation project on liquidity forecasting was to develop and adapt a liquidity forecasting spreadsheet to the circumstances in Malawi (see Appendix 1).

Basically, a judgmental approach to liquidity forecasting consists of three steps to estimate the liquidity effects of changes in NGP:

- A time series of the daily liquidity injection or withdrawal from the government’s account at the RBM the previous budget year
- A forecast, based on the government’s budget, of the extra daily injection or withdrawal of liquidity from the government’s account at the RBM the next budget year. This would include an assessment of special factors that might make the seasonal patterns of this year’s payments different from the previous year’s payment pattern.
- The sum of 1) last year’s daily net liquidity injection and 2) the forecast of the extra daily net injection this year are equal to this year’s estimated net liquidity effect of changes in the NGP.

The forecast of the liquidity effect of changes in the NGP shall be added to the estimated liquidity effects of changes in net foreign assets, change in currency in circulation and expected change in outstanding government securities. Some simplified examples adapted to the circumstances in Malawi are illustrated in the tables below.

1. Estimate of the yearly liquidity effect of a change in NGP

The starting point is to calculate the yearly liquidity effect of the change in NGP, as implied by the government budget. In this respect, it is very important to eliminate government transactions that do not have an effect on the banking sector’s liquidity position, e.g. donor aid in foreign currency, government interest payments on foreign debt and transactions between the central bank and the government. Table 1 provides an illustration of this kind of calculation.

Table 1. Estimate of the expected net liquidity effect of the government budget.
Budget year 2005/06*. Million K (+ withdrawal/ - injection)

1	Government Budget Surplus (plus)		-2703
	<i>Transactions without liquidity effect:</i>		
2	Grants, donor aid in foreign currency (minus)	-51411	
3	Interest payments on foreign debt (plus)	3360	
4	Interest payments from the RBM to the Government (minus)		
5	Transfer of the RBM surplus (minus)		
6	Sum without liquidity effect		- 48051
7	Other possible government transactions without liquidity effect due to special institutional circumstances in Malawi		
8	Net Liquidity effect of the government budget		- 50754

* Source: Malawi Government Budget Document No 5. Budget for the Financial Year 2005/06

Data for interest payments on the government’s account at the RBM and the possible transfer of the RBM profits to the Government are not included in Table 1, which is based on the approved budget for 2005/06. It might be expected that the change in the NGP, even with a projected deficit and financing need of K 2.7 billion, would inject around K 50 billion of liquidity into the banking sector. This is mainly due to the fact that donor inflows do not withdraw local currency liquidity, while the subsequent government domestic spending of this capital injects liquidity.

2. Estimate of the expected yearly change in the banking sector’s liquidity

In order to project the change in the liquidity position of the banking sector, the RBM must take into account foreign exchange transactions with dealer banks in Malawi (Net Foreign Assets), net change in outstanding government debt and changes in currency in circulation. On a yearly basis this could be done as illustrated in Table 2.

Table 2: Estimate of expected, yearly change in the banking sector’s excess liquidity*
Billion K

1	Banks’ excess liquidity, July 1, 2005		87
2	Net liquidity effect of the government budget	50754	
3	Net liquidity effect of RBM’s FX transactions with dealer banks and domestic customers	0	
4	Change in currency in circulation	- 3300	
5	Change in outstanding T-bills	- 2700	
6	Total liquidity supply through the year		44754
7	Change in required reserves		- 1600
8	Banks’ expected excess liquidity, June 30, 2006		43241

* Source: Internal data at the RBM. For the purpose of this illustration we have used the data from July 1, 2004 to June 30, 2005 for change in currency in circulation and for change in required reserves.

At the beginning of the 2005/06 budget year, banks’ excess liquidity was close to zero. However, as estimated in Table 1 it can be expected that the government will inject around K 50 billion of liquidity into the banking sector. The starting assumption for the liquidity effect of the central bank’s foreign exchange transactions is that they will be liquidity neutral over the year. The change in currency in circulation can be estimated by looking at seasonal factors during the year and at structural variables like GDP, interest rates, inflation etc. to catch the trend effect. The change in outstanding Treasury bills follows from the Government’s financing requirement.

3. The yearly and day-to-day forecasts of the liquidity effect of changes in the NGP

To arrive at a short-term forecast, daily or weekly, it is possible to combine the information from the government budget with the actual development of the autonomous liquidity factors the previous year. In practice, this can be done as in Table 3.

Table 3: Forecast of daily or weekly extra liquidity in 2005/06* (+ means injection of liquidity) Million K

Net liquidity effect of changes in NGP for the budget year 2004/05	35437
Forecast of net liquidity effect of changes in NGP for the budget year 2005/06	50754
Change in net liquidity effect from 2004/05 to 2005/06	15317
Change in net liquidity effect from 2004/05 to 2005/06, per week	15317/52 =295
Change in net liquidity effect from 2004/05 to 2005/06, per day	15317/265** =58

* Source: Malawi Government Budget Document No 5. Budget for the Financial Year 2005/06

** Per working day

Table 3 shows that the RBM could have expected the Government's injection of liquidity to the banking sector to be increased by K 15.3 billion from the 2004/05 budget year to the 2005/06 budget year. On average, the injection of liquidity could be expected to increase by K 295 million per week or K 58 million per day. It is important to note that in Table 3 we are calculating the extra injection or withdrawal of liquidity compared to the previous budget year. On a weekly or daily basis the RBM can then calculate as in Table 4.

Table 4: Estimate of expected liquidity effect of change in NGP on a weekly/daily basis

Liquidity effect of change in NGP for each week/day in 2004/05, based on historical data
+ For each week/day in 2005/2006 add expected, extra net injection of liquidity
+ Adjustments due to special factors
= Expected ordinary liquidity effect of change in NGP for each week/day in 2005/06

An illustration of this forecasting method for monthly data for domestic revenues is shown in Table 5 and Chart 2 below. This is a simplified example that was used in the beginning of our project to illustrate that a rather crude estimation could also be used to shed some light on the expected liquidity development. The second column states the realized domestic revenues for the previous budget year on a monthly basis. The government budget for 2005/06 states that the total projected domestic revenues for the budget year is expected to be K 65385 million. This implies that revenues are expected to increase by close to 15 percent between the two budget years. If the seasonal patterns of government domestic revenues are stable, domestic revenues

each month can be expected to be 15 percent higher than in the corresponding month last year. These estimates are presented in the third column. The fourth column presents the realized figures up to February this year. Graph 1 illustrates that this simple method underestimated the revenues in August and September 2005, but has tracked the actual data fairly well thereafter. As the central bank staff could be expected to have up-to-date knowledge about developments in the domestic economy, they might have been able to adjust this simple forecast accordingly.

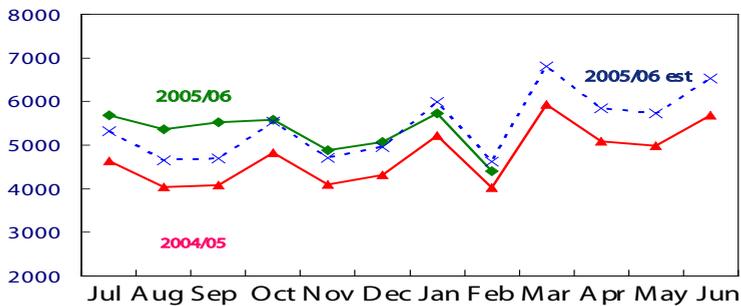
Table 5: Illustrative forecast of government revenues in Malawi for the budget year 2005/06. Million K

Forecast for government revenue	2004/05	2005/06	2005/06
	Actual*	Budget estimate	Actual
July	4639.4	5327.4	5681.1
August	4046.0	4646.0	5370.4
September	4086.9	4693.0	5519.9
October	4818.9	5533.5	5583.5
November	4103.8	4712.4	4877.3
December	4317.5	4957.8	5072.7
January	5219.3	5993.3	5722.3
February	4021.7	4618.1	4408.4
March	5930.6	6810.1	
April	5085.7	5839.9	
May	4990.6	5730.7	
June	5680.1	6522.5	
Sum budget year	56940.5	65385.0**	
Percent change		14.83	

* Source: Reserve Bank of Malawi, Financial and Economic Review, Number 4 2005

** Source: Malawi Government Ministry of Economic Planning and Development Quarterly Economic Review July – September 2005

Chart 1: Estimated government domestic revenue, Mill K. Based on budget estimate of 15 percent yearly wage growth



An important part of the liquidity forecasting exercise is to adjust the forecast for expected changes in the seasonal pattern, as shown in line 3 of Table 4. These adjustments should be made both when the yearly forecast is made and during the year as new information is gathered. One type of adjustment of the seasonal pattern for NGP is to take account of changes in payment practices, e.g. possible changes in the due dates for different types of taxes. Another type of adjustment might take account of special developments in the economy. For example if a budgeted increase in government revenues is mostly due to expectations of higher payroll taxes, the projected extra withdrawal of liquidity should for the most part be placed on the payment days for payroll taxes.

In order to be able to adjust for special factors it is necessary to have knowledge about the procedures and practices of government payments. The most important parts of government domestic revenues are received on fixed dates during the month. According to the MoF, payroll taxes (19 percent of domestic revenue⁴⁹) are normally paid into the Government's account at the RBM around the 15th of each month, based on wages and salaries the previous month. Value added taxes (27 percent of domestic revenue) are paid to the Government at the end of each month, based on turnover the previous month. That means that the payment dates of more than 40 percent of domestic revenues are well known. Custom duties (11 percent of domestic revenue) are paid to the RBM immediately when goods and services are imported. The amount is strongly cyclical and to a large extent related to the tobacco season.

On the expenditure side, several transactions take place at fixed dates. According to the MoF, government wages and salaries (19 percent of government expenditures) are paid the 27th of each month. The Government's domestic interest payments are of course known with certainty (19 percent of government expenditures). Pensions and gratuities (3 percent of government expenditures) are also most probably paid on fixed dates.

⁴⁹ Source: Reserve Bank of Malawi, Financial and Economic Review, Number 4 2005

During the technical cooperation project, the RBM has built up more detailed knowledge about government transaction dates, and has been able to make judgments as to whether payment schedules have been changed. They have also assessed whether developments in the economy imply a magnitude of transactions that is different from the projections that were based on the budget.

Other expenditures (44 percent of government expenditures) and other current transfers (11 percent of government expenditures) do not follow fixed payment schedules. A starting point for the forecast could still be to assume that these payments follow the same pattern as last year.

The process of making a yearly liquidity forecast based on the government budget should start when the new budget is presented. In Malawi, the government budget is approved by the Parliament in late June. On the basis of the budget, the RBM was advised to:

- Estimate the expected change in the banking sector deposits at the RBM through the year
- Estimate the expected change in government deposits at the RBM through the year
- Make a tentative estimate for T-bill auctions based on the Government's financing need
- Make a tentative plan for sterilization of liquidity surplus created by donor inflow (in foreign currency)

The yearly forecast and its underlying assumptions should be documented in a working paper. This is crucial information that must be readily available when the forecast is to be revised during the year. The forecast must be revised, sometimes totally, when the Government revises the budget. In Malawi, the budget is revised at the beginning of January.

In addition, it is necessary to make a thorough assessment of forecasting errors, and revise the forecast according to new information every month. The assessments of revisions to the forecasts should be documented in a working paper.

The forecasting staff should actively seek information every day to improve the forecast and obtain knowledge about near-term transactions. This is most effectively accomplished when the staff has an extensive information network at other departments of the RBM, the MoF and other relevant government entities. Even following the news media may give relevant information about government investment projects and provide cause for further inquiries at relevant ministries.

4. Day-to-day forecasts of the other autonomous factors

In order to get a day-to-day forecast for the development in bank reserves, the RBM must also forecast changes in NFA, changes in outstanding government securities and changes in currency in circulation.

Most central banks forecast that they will not intervene in the foreign exchange market during the year, and therefore not affect bank reserves through this channel. In Malawi, the RBM has at times been regularly in the market to smooth foreign exchange rate movements connected

with the tobacco season. The RBM should have a position on whether these seasonal transactions should be included in the yearly forecast. For a weekly or daily forecast during the tobacco season it seems better to include foreign exchange transactions that are highly likely to be executed by the RBM.

A forecast of the liquidity effects of changes in outstanding government debt must take into account the maturing securities and possible auction plans. Changes in outstanding government securities do not pose significant problems for liquidity forecasting. The change in currency in circulation can be estimated by looking at seasonal factors during the year and at structural variables like GDP, interest rates, inflation etc. to catch the trend effect.

IV. The RBM's framework for liquidity forecasts and policy papers

Monetary policy in Malawi is formulated by the Monetary Policy Committee (MPC) and implemented by the Treasury Department. The MPC has monthly meetings, chaired by the Governor. The Monetary Policy Implementation Committee (MPIC) is the technical arm of the MPC, and is responsible for preparing papers on topical issues for the MPC. The MPIC is chaired by the Executive Director of Economic Services, with the Director of the Research and Statistics Department as deputy.

The RBM has developed a liquidity forecasting spreadsheet model which includes the following "sub-spreadsheets":

- Historical data for the autonomous liquidity factors: Government transactions, MoF operations in T-bills and currency in circulation
- Historical data for RBM operations
- An overview of the main government expenditures and revenues for the budget years 2005/06 and 2006/07.
- A table that documents when the Government and the RBM make their regular transactions
- A forecasting table which includes all variables that affect banking reserves
- Spreadsheets containing graphs and tables that give an overview of the forecasts of Bank Reserves, currency in circulation, and reserve money relative to the reserve money target

The spreadsheet includes forecasts for the following autonomous factors:

- Net government position
- Net government securities
- Net currency in circulation
- The RBM's foreign exchange transactions with customers (i.e. no policy transactions)
- Maturing market operations

Together with the change in currency in circulation, these factors add up to the change in RM before new market operations are undertaken (the structural liquidity position), which is to be compared with the RM Target. The gap between the forecasted RM before new market operations and the RM Target should in principle be closed by using market operations. The

liquidity analyst can on the basis of these gaps analyze and assess how the RM Target may be reached.

The current liquidity forecasting framework is used daily by the Treasury Department as a basis for the evaluation of the liquidity situation. The RBM makes daily forecasts for the budget year. The RBM's Daily Money Market Report, which is published on the RBM website each morning, is partly based on the liquidity forecasting framework.

The liquidity forecasts constitute an important part of the Treasury Department's policy paper, "Foreign Exchange and Money Market Developments", to the MPIC. The paper describes recent developments in banking liquidity and open market operations, and provides liquidity forecasts. The expected developments of the autonomous liquidity factors are explained, and forecasts for RM, banking reserves and currency in circulation are presented by way of graphs with daily figures, and tables with weekly and monthly figures. Moreover, preliminary recommendations about the use of instruments to manage the liquidity development are presented. The Treasury Department considers implementing some further improvements, such as:

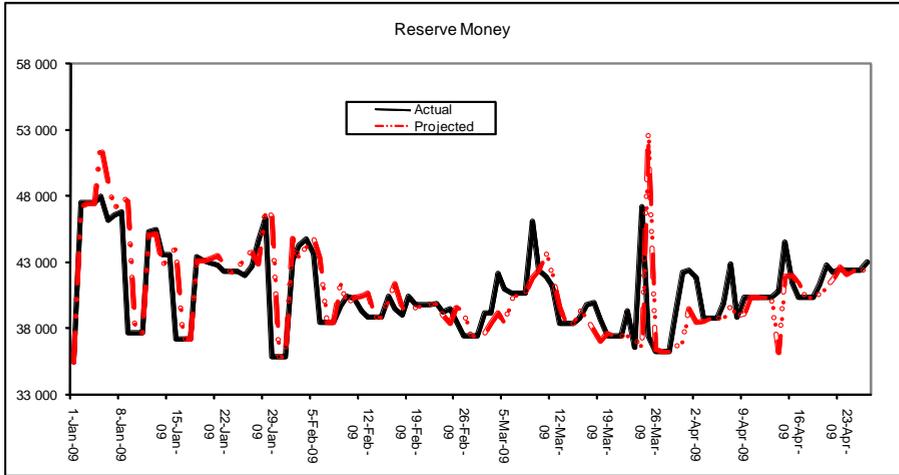
- Including a more substantive explanation of the underlying reasons for the development of the autonomous liquidity factors
- Presenting the forecast performance since the previous MPIC meeting
- Including, on a quarterly basis, a forecast for the entire budget year, which may be used as a basis for the discussion of the longer term strategy for liquidity management
- It may be considered too resource demanding to produce comprehensive liquidity forecasts every month for the MPIC and the MPC meetings. An alternative approach could be to produce the comprehensive forecasts quarterly, and to include the forecasts in the comprehensive, integrated quarterly policy paper to the MPC.

The Treasury Department has quarterly meetings with the MoF about government cash flows. In addition, the liquidity analysts at the RBM have informal contacts with relevant personnel in the MoF, especially the Budget Director, when that is considered necessary. The RBM is considering establishing a Memorandum of Understanding with the MoF which clearly spells out desired information flows between the two institutions on government transactions and movements in government accounts.

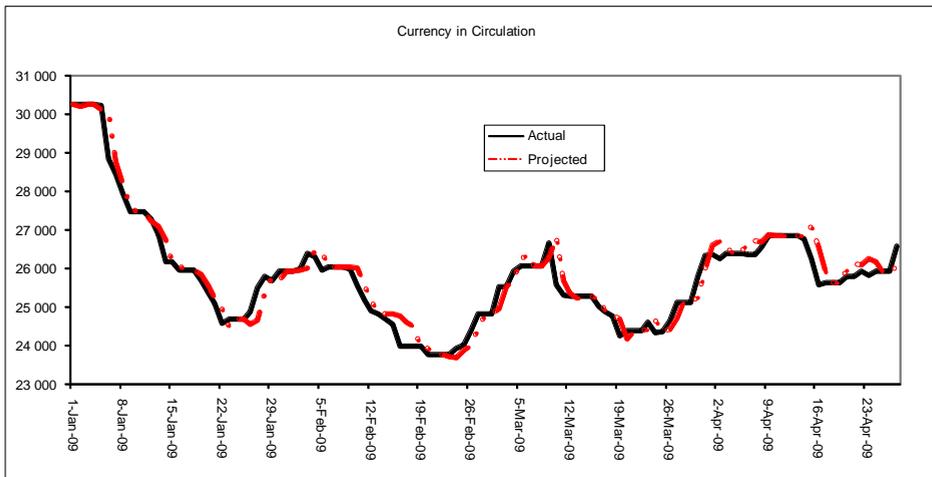
Two concrete ways of strengthening the information flows on government transactions would be to start using information from the Government's Integrated Financial Management Information System (IFMIS), and for the RBM to become a member or observer of the Cash Management Unit (committee), which will be established in the Accountant General's Office.

Graphs 1 – 3 present the forecasts for RM, currency in circulation and net government position, before use of any liquidity instruments, during the first quarter of 2009, compared with actual outcome. The graphs show that the forecasts mirror the trend well, albeit the forecast errors are significant on certain days. All in all, the RBM's liquidity forecasting framework appears to be fully operational and well established.

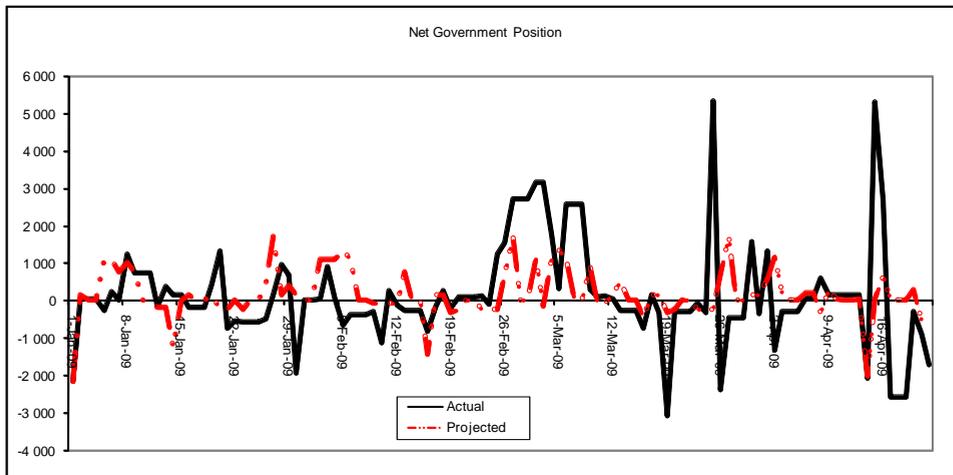
Graph 1: Reserve Money. Forecasts and Actual Developments. January – April 2009. Daily Figures



Graph 2: Currency in circulation. Forecasts and Actual Developments. January-April 2009. Daily Figures



Graph 3: Net Government Position
 Forecasts and Actual Developments. January-April 2009. Daily Figures



V. Publication of liquidity statistics

The RBM publishes its liquidity forecast for the same day in the Daily Financial Market Statistics. The estimated change in the NGP for the same day is included. According to the IMF⁵⁰ (2000), disclosing the central bank's liquidity forecasts may help the banking sector to form expectations of the overall liquidity situation. This may facilitate banks' liquidity management and contribute to stabilizing liquidity conditions. However, publishing liquidity forecasts may not contribute to stabilizing liquidity conditions if the projections are subject to significant errors and uncertainty. If so, publishing forecasts may be more misleading than guiding for the banks. When interbank money markets are relatively inefficient and segmented, it may become difficult for banks to interpret the central bank's overall assessment of the liquidity situation since the distribution rather than the level of reserves is relevant. According to the IMF (2000), in such cases it would be preferable to improve the forecast quality and develop an efficient interbank money market before publishing the central bank's liquidity forecasts.

Considering that the forecasting spreadsheet is relatively new and that the RBM has not fully evaluated the forecasting errors, the RBM considers publishing a detailed, daily liquidity forecast to be somewhat premature, even when the forecast is only for the same day. An alternative solution could be to publish expected average level of liquidity for the week. Government transactions are inherently difficult to forecast, and errors in liquidity forecasting must be expected. The RBM was advised to consider publishing more up-to-date daily and monthly (averages) data for the main liquidity factors and the RBM's instruments on its website.

⁵⁰ IMF/MAE Operational Paper, Liquidity Forecasting, November 2000

The information might comprise data for change in the:

- Net government position
- Net government securities
- Net currency in circulation
- Net foreign exchange operations on behalf of customers
- Net RBM monetary operations
- Net sales of instruments denominated in Malawi Kwacha
- Net foreign exchange interventions,
- and the levels of:
 - Bank reserves
 - Currency in circulation
 - Reserve money

This may be published with the delay necessary for quality control of the data. Even if forecasts were not published, it may still prove useful for the market to receive information on past liquidity developments. If information about changes in NGP is considered to be too sensitive, one possibility is to publish statistics on: bank reserves, currency in circulation, reserve money, net RBM monetary operations, net government securities and net “other operations”.

VI. Resource requirements for liquidity forecasting – administrative matters

It is imperative to allocate adequate resources to the work on liquidity forecasting. In the report, it was recommended that the RBM allocate two analysts to the forecasting exercise, so that they can substitute for each other during holidays, sickness, etc. For a given period, one of the analysts should be the “responsible officer” for the forecasts and devote most of the working time to this. Although the analyst may have other duties as well, the work on liquidity forecasting has to be given high priority. The second liquidity forecast analyst could in this period function more as a discussion partner and a controller of data quality, etc. In the next period, the roles of the two analysts would change. Consequently, over time the RBM would have two qualified analysts on liquidity forecasting. Additionally, managers should pay close attention to the work on liquidity forecasting.

The analysts working on liquidity forecasting should have good skills in working with spreadsheets. Accuracy is a prerequisite when working with liquidity forecasting. The analysts should also be able to understand and assess how the forecast relates to developments in the economy in general, e.g. the relationship between government revenue and nominal economic growth. Furthermore, it is important to develop adequate risk management routines for the liquidity forecasting exercise. This would include routines for:

- Daily back-up of spreadsheet and data
- Two analysts working together in this area, so that they can act as discussion partners and substitute for each other
- Regularly controlling that the daily figures are in accordance with the annual figures

- The analysts and management of the Treasury Department should evaluate whether the forecasts look reasonable
- Regular evaluations of the forecasts (the quality of the forecasts depends to a major extent on the MoF's data input)

A comprehensive Users Manual for the liquidity forecasting exercise, documenting daily and periodic routines, has been developed.

The RBM's Treasury Department is split into the Front Office and the Middle Office. The Front Office is in charge of monetary policy implementation. The Middle Office is responsible for the provision of liquidity forecasts. The liquidity forecasting exercise requires well-established coordination between the Middle Office and the Front Office, which is the main user of the forecasts, and with the various data providers in the RBM (foreign exchange and capital flows, the RBM's monetary operations, currency in circulation, and banks' reserves) and in the MoF (government cash flows).

APPENDIX: Main forecasting table of the Liquidity Forecasting Spreadsheet

	Date	Thursday	Friday
	(K' Million)	1-Nov-07	2-Nov-07
FORECAST			
Net Government Position 2006		-100	477
1. Net Government Position 2007		1 587	23
Net Government position 2005			
General expenditure		212	212
Factors from budget			
Revenues		189	189
Corporate tax			
P.A.Y.E.			
V.A.T			
* Excise and import duties		99	99
Withholding		36	36
Fringe benefits		9	9
Non-resident tax		45	45
Expenditures		1 564	-
Salaries			
Pensions			
Local Registered Stock			
Arrears		25	
Transfers		831	
Development funding		708	
Other (court judgments etc)			
2. Government Securities		- 48	-
Maturing TBs		1 661	
Issuances of TBs		1 709	
Net currency 2006		124	4
3. Net currency 2007 (deposits+/withdrawals-)		100	- 29
4. Net Foreign Exchange Operations (Commercial Transactions)		17	-
Purchases		17	
Sales			

5. Maturing RBM monetary operations	398	-
RBM Bill Maturities	192	
Maturing discount window accommodation (net)		
Maturing repos	206	
Daily change in bank reserves (before operations)	2 054	- 6
Banking reserves (projection before operations)	10 241	8 181
Daily change in Currency in circulation	-100	29
Currency in circulation (projection)	23 686	23 815
Reserve Money (projection before operations)		31 996
Reserve Money Target		27 442
Divergence (before operations)		4 555
CONTROL TABLE (autonomous factors)		
	1.11.07	2.11.07
Net Government Position 2007	1 587	23
Net Government Securities	- 48	-
Net currency 2007 (deposits+/withdrawals-)	100	- 29
Net Foreign Exchange Operations	17	-
Maturing RBM monetary operations	398	-
Change in banking reserves (before operations)	2 054	- 6
Market Operations	- 1 042	-
RBM Bill Issuances	343	
Discount window accommodation		
Repos		
Outright sale of securities		
Forex sales to ADBs	699	
Outright purchase of securities		
Forex purchases from ADBs		
Daily change in bank reserves (after operations)	1 012	- 6
Daily change in Currency in circulation	-100	29
Reserve Money (projection after operations)	34 060	31 996
Divergence (after operations)	34 060	4 555

Reserve Money (Actual)	31 973	32 115
Currency in circulation (Actual)	23 786	23 917
Bankers' Deposits (Actual)	8 186	8 198
Reserve Money (Actual minus operations)	33 015	32 115
Bankers' Deposits (Actual minus operations)	9 228	8 198

ACCOUNTING DATA

Net Government Position 2007	77	- 299
Net Government Securities	- 48	
Net currency 2007 (deposits-/withdrawals+)	17	29
Net Foreign Exchange Operations		
Maturing RBM monetary operations		
Market Operations		
Change in banking reserves (Actual)	46	- 270

Weekly Forecast of Bank Liquidity

(in millions of Kwachas)		
Week ending:	2-Nov-07	9-Nov-07
Net Government Position 2007	1 822	117
Government Securities	-48	25
Net currency 2007 (deposits-/withdrawals+)	404	55
Net Foreign Exchange Operations	109	-
Maturing RBM monetary operations	398	788
Change in liquidity	2 685	985

Chapter IX

Monetary and Foreign Exchange Policy Implementation

Morten Jonassen^{51 52}

I. Background

The monetary policy of the Reserve Bank of Malawi (RBM) aims to maintain low inflation, and the intermediate target is the Reserve Money (RM). The operating monetary policy targets are Net Domestic Assets (NDA) and Net Foreign Assets (NFA). From the liabilities side of the central banks' balance sheet the RM is defined as commercial banks' deposits at the RBM plus currency in circulation. The target for NFA is formulated as a minimum level. The RBM has also placed substantial weight on the stability of the nominal exchange rate. For the last 3 – 4 years the RBM has on a daily basis kept the nominal exchange rate of the Malawi Kwacha (K) stable vis-à-vis the US dollar (USD).

Traditionally, the monetary targets have been set quarterly at end-of-period. This tended to result in systematic and sizeable intra-quarter deviations of the key monetary variables from the targets and the use of large end-of-quarter interventions to meet the targets. The intra-quarter deviations were in large part due to difficulties in forecasting liquidity and cost considerations, which therefore has been addressed specifically in the technical cooperation project. As outlined in Chapter VIII, the RBM has now established a fully operational liquidity forecasting framework.

All in all, the formulation and implementation of monetary policy in recent years has served Malawi well, and progress has been achieved in the implementation. However, monetary policy implementation has also been facing several challenges. According to IMF's Occasional Paper 244 (2005), *Monetary Policy Implementation at Different Stages of Market Development*, central bankers around the world generally agree on the benefits to the economy of using market-based instruments to implement monetary policy. This may not, however, be easily accomplished in countries that have not yet succeeded in developing their money markets. The experience of countries at different stages of money market developments has shown that the timing and speed of moving toward reliance on money market operations to conduct monetary policy must be tailored to each country's particular circumstances.

In the IMF's Occasional Paper 244 (2005), it is stated that small countries that have been able to develop effective market-based operational frameworks have the following characteristics:

⁵¹ Morten Jonassen was MCM/IMF short-term expert, and is Assistant Director, International Department, Norges Bank Monetary Policy.

⁵² We wish to thank Simon Gray and A. Chailloux, MCM/IMF, Neil Nyirongo, Executive Director of Economic Services, Director Henry Mathanga and staff of TRD for helpful comments. .

- A functioning interbank market that allows the central bank to manage overall liquidity conditions through monetary operations
 - A mix of rules-based instruments and open market type operations
 - Average reserve requirement remunerated at market rates. Eligible assets may include deposits with the central bank and, in incipient interbank markets, central bank securities issued through an auction to withdraw excess liquidity
 - Standing deposit and refinancing facilities that form a corridor for interbank market rates. Standing facilities absorb temporary liquidity shocks and may substitute for fine tuning instruments
 - Open market type operations, effected as auctions of central bank credit or central bank bills

In addition, a situation with significant unpredictability in the liquidity situation generally calls for flexible monetary policy instruments and automatic stabilizers, like standing facilities and averaging provisions. Standing facilities can be seen as an end-of-day safety instrument for liquidity imbalances at individual financial institutions. Liquidity reserve requirements, which are set on average basis during the maintenance period, could also have a buffer function in the event of unexpected liquidity shocks or inefficiencies in the redistribution of reserves through the interbank market.

In the technical cooperation program, the RBM requested a project that supported the process toward implementation of a more market-oriented framework for the RBM's monetary and exchange rate policy. This article will address the main issues that were dealt with during the project to make the RBM's monetary and foreign exchange policy design and implementation more market-based.

II. Domestic monetary instruments and operations

1. RBM's monetary policy instruments

When the technical cooperation project on monetary and foreign exchange operations commenced in November 2006, the RBM used four main categories of financial instruments in its implementation of monetary policy:

- Open market type operations; RBM-bill auctions with 91 and 62-day tenor
- Open market operations; outright transactions in Treasury bills (T-bills), repos and reverse repos in T-bills and RBM bills
- Standing facilities; the Standing Facilities Window (discount window borrowing facility) and the liquidity reserve requirement (LRR)
- Operations in the foreign exchange market

The Government in Malawi issues T-bills to cover its financing needs. The changes in the outstanding stock of T-bills, held outside the RBM, also affect the liquidity situation, but the RBM has not regarded primary issuance of T-bills as a liquidity management instrument.

The Bank rate (the interest rate on the Standing Facilities Window) is seen as the benchmark interest rate indicator, which signals to the market the expected movements in the market interest rates. The Bank rate is administratively set. The interbank money market rate, the primary market interest rates on T-bills and RBM-bills, and the banks' deposit and lending rates, normally move in tandem with the Bank rate.

Borrowing under the Standing Facilities Window shall occur at a minimum overnight and for a maximum of seven days. Both the RBM bills and repos have been used to manage the more long-term structural liquidity position. The repos and outright transactions in T-bills have also been used to fine tune the liquidity situation.

The amounts and the number of participants in the RBM-bill auctions have varied significantly. In periods when interest rates were expected to be reduced, investors have preferred T-bills with longer maturities. In many respects these are competing with the RBM bills.⁵³ The RBM bills also compete with repos bilaterally negotiated with the RBM.

The repo has at times been the dominant instrument to mop up liquidity. The maturities of the repos have varied between 3 and 273 days. Traditionally, the repo transactions have not been tendered to the market, but have been bilaterally negotiated transactions conducted with banks or discount houses. In order to make a repo more attractive, they are occasionally made back-to-back with other transactions, e.g. in the foreign exchange market. Moreover, it is important to communicate the terms of the repo to the market participants.

Previously, the banks and the discount houses have known that when they have surplus liquidity, they could normally call the RBM to negotiate a repo. Moreover, the RBM could through the Real Time Gross Settlement system (RTGS) monitor which banks are in a surplus liquidity position. In light of the liquidity situation, the RBM might through one-on-one negotiations offer the surplus banks a repo. Naturally, the RBM was not obliged to enter into any deals. Banks' easy access to RBM repos made them somewhat similar to a standing (term) deposit facility at market interest rates. The RBM's outright sales and purchases of securities were also bilaterally negotiated trades.

2. Suggested changes in the RBM's monetary policy instruments

The standard structure for a central bank's monetary policy instruments is to operate an interest rate corridor with a standing overnight borrowing facility that is above market rates and a standing overnight deposit facility that is below market rates. This corridor normally forms the upper and lower limits for the interest rates of the open market operation instruments, which steer the overnight interest rate in the money market.

At the RBM, the Standing Facilities Window (the discount window) is above market rates. The RBM does not offer a standard overnight deposit facility to the banking sector. Because of high frequency and easy access, the bilateral repo resembles a standing (term) deposit facility at

⁵³ Repos with a longer maturity is another alternative to RBM bills.

market rates. The liquidity reserve requirement and excess reserves are not remunerated. The RBM-bill auction has usually played an insignificant role in the liquidity management, and the bilateral repos did not provide any information on market rates as they were bilaterally negotiated transactions. The interest rate, or maturities, of the bilateral repos were not provided to the market. In practice, the RBM therefore lacked a standardized short-term monetary policy instrument.

In the project, the following alternative monetary instrument structure was recommended:

- Establish the Standing Facilities Window as a standing borrowing facility, but limited to overnight funds. The interest rate of the discount window would be the upper limit for overnight rates
- Replace the bilaterally negotiated repos and outright transactions with a new standardized short-term open market instrument sold at auctions, and use the new instrument to fine tune liquidity, if necessary
- Use the RBM bills (or possibly T-bills) to manage the structural liquidity position
- As before, unremunerated required and excess reserves form the lower limit of the interest rate corridor (Alternatively, introduce a standing deposit facility with positive interest rates).

The importance of steering the liquidity development relatively smoothly and on a continuous basis to avoid using the liquidity management instruments excessively towards the end of the quarter, i.e. the measurement point for the RM targets, was also underscored.

This would imply that the Bank rate would no longer be the main signaling interest rate, but only form the upper limit of the RBM's interest rate corridor. The repo rate should be expected to be close to and steering the shortest money market rates. An interest rate corridor could be expected to limit interest rate volatility. Initially, the width of the corridor might be made quite wide and narrowed gradually in light of experience. The repo rate could eventually perform as the reference rate for the money market. The repo auction results should be announced on the RBM website to increase transparency in the market.

2.1 Auction modalities

When the RBM wants to mop up liquidity from the market, the bidders may have several options for asset allocation. It may therefore prove difficult to use a volume tender, where the interest rate is set by the RBM. In order to drain the desired amount of liquidity, it would be preferable to use an interest rate auction. In this case, the RBM must be willing, within reasonable limits, to pay the interest rate necessary. If the cut off rate is clearly outside the market level, the RBM should have the option to cancel the auction. The banking sector's alternative liquidity holdings are unremunerated excess reserves, and the banks may therefore bid less aggressively in a new auction the next day.

The frequency of the auctions and the maturity of the repos may be adapted to the variability of the autonomous liquidity factors. The repo may have a maturity of one or two weeks. The RBM, as most central banks, may retain the possibility of conducting both regular and ad-hoc market

operations. Large, unexpected swings in the liquidity situation may sometimes call for ad hoc use of instruments. Since the RBM does not follow the desired path of the monetary target variables from day to day, it is recommended that a repo instrument is issued with a weekly pattern. Whether weekly auctions are required depends on how closely the RBM needs to follow the monetary target variables. The RBM should have the possibility of auctioning both repos and reverse repos to fine tune the liquidity development. When the repo is used as a short-term fine tuning instrument, the risk related to achieving the monetary target by moving to an auction format would be reduced.

The auction modalities could be quite similar to the RBM-bill auctions. To achieve a same day tender and settlement process, participation should be limited to banks and discount houses, and the number of bids may be limited to, e.g., five bids per institution. The invitation to the repo auction and the announcement of the tender results should be announced via electronic news services or via fax. In order to make the repos more attractive to banks, the RBM may introduce the possibility of arranging buy-back auctions of repos and make the repos tradable among banks.

When the RBM introduces the new repo instrument, sold through auctions, it must at the same time inform the financial market that the regular use of bilaterally negotiated repos and outright securities transactions has been brought to a halt. A repo auction will not succeed if market participants assume that they in any case may get a better bilateral deal later, possibly also connected to foreign exchange transactions with the RBM. One way to prepare the market participants may be to discuss the changes with the Bankers' Association (BAM), the Dealers' Association and not least, the senior management of the banks.

The RBM may retain the possibility of making bilateral repos⁵⁴ in special circumstances, e.g., if the participants in a repo auction covering the end of a quarter (measurement point for the RM target) in a cartel like manner asked for interest rates clearly above market rates. In that case, the auction could be cancelled, and the RBM could fall back on bilateral trades. This should only be the solution in extraordinary situations, and should not be used to hinder an interest rate development which is coherent with the RM target.

2.2 Implemented changes in the monetary policy instruments

The RBM has implemented many of the above suggestions. For instance, it is to a greater extent smoothing the liquidity management to avoid "aggressive" use of instruments toward the end of the quarter. The bilateral repos have been replaced by repos sold through auctions, after consultations with market participants. Repos are issued for O/N, 7 days, 14 days, 30 days and 60 days in open auctions where banks bid for both the volume and the interest rate. The idea is that banks shall have a menu of options for placing excess liquidity with the RBM. The RBM accepts bids according to its liquidity forecast, taking into account that the interest rate is at a reasonable level. The repos have for practical purposes replaced the RBM bills.

⁵⁴ For example, the ECB has the possibility of conducting bilateral transactions as a fine tuning instrument.

The auction is announced on Tuesdays via e-mail to all banks. Bids have to be submitted before 10:00 am the following Friday with settlement the same Friday. The results are announced via e-mail to all banks, normally within an hour after the bid deadline. However, the results are not available to the general public, e.g. they are not published on the RBM website, as was previously done with the RBM bills. The Bank Rate, the interest rate at the Discount Window (the top of the interest rate corridor), is therefore still the main signaling rate of the RBM.

The RBM has chosen not to introduce a standing deposit facility with an interest rate above zero. This is partly due to cost considerations and partly because it is assumed that a positive deposit rate at the RBM will hinder the development of the interbank market, as banks with excess reserves would be less motivated to trade in the interbank market. The volatile interbank rates are seen to be primarily a result of imperfections in liquidity distribution, which are due to perceived counterparty risk and a lack of collateral on the part of some banks. The money market interest rate corridor in Malawi therefore remains quite wide, ranging from 0 percent up to the Bank rate, at 15 percent in May 2009.

The averaging period for the reserve requirement in Malawi is one week. As the major instruments affecting liquidity (T-bill and RBM-bill auctions) are used weekly, a longer averaging period would give both the RBM and the individual banks more flexibility in their liquidity management and could contribute to dampen volatility. Several central banks use an averaging period of two weeks. Publishing more frequent and more recent statistics on liquidity developments might also dampen volatility.

3. Proactive implementation of the RBM's operational monetary targets

In order to implement a policy target, it is useful to produce a forecast of the liquidity conditions for the whole year. The forecast should have been discussed by the Monetary Policy Implementation Committee (MPIC) and the Monetary Policy Committee (MPC) at the beginning of the year. On the basis of this discussion, a preliminary strategy and preliminary decisions should be drawn up on how to achieve the operational targets for monetary policy. At each subsequent MPIC/MPC meeting, the strategy may be reviewed in light of actual liquidity developments and recent information on, e.g., government expenditures and revenues. In the current process of liquidity monitoring and policy considerations, active involvement of the Treasury Department's management is essential on a daily basis, both to coordinate the positions of the Front Office and the Middle Office with those of other departments and to keep the members of the Senior Management team duly informed.

To introduce a more proactive stance in the daily liquidity management and to prevent the development of major deviations from the monetary targets, the following internal meeting and decision structure was launched:

- The *monthly* meetings of the MPIC and the MPC review past developments, forecasts and strategies for implementation of monetary policy
- *Weekly* meetings chaired by the Director of the Treasury Department and with representation from the relevant departments of the RBM. The meeting should be attended by senior staff

from the MoF with strong involvement in the Government's cash flow management. The meeting should review recent developments and liquidity forecasts and draw up preliminary policy recommendations for the next week(s). The meeting should normally last less than one hour

- *Daily* meetings within the Treasury Department, chaired by the Director (or his/her appointee) of Treasury Department, where the liquidity forecasts and a proposed policy action is presented and discussed. In special situations, where strong or unusual policy reactions are required, it may be necessary to consult and get approval from relevant member(s) of the Senior Management. The daily meetings should normally not last more than 10-20 minutes, and could be combined with the existing "dealers meeting". This would strengthen the communication between the Treasury Department's Middle Office, which produces the liquidity forecasts, and the Front Office, which conducts the market operations. The decisions may be documented and circulated to the entire Senior Management team.

4. The interbank market

An efficient interbank market is a prerequisite for reliance on money market instruments. In Malawi, the interbank money market has not been functioning well. Even in a situation where there is significant excess liquidity in the banking sector as a whole, the RBM has experienced that the banks are borrowing at the Standing Facilities Window. The lending in the interbank money market appears to be limited by several factors, including banks' credit ceilings on other banks, unwillingness to reveal commercial interests to each other, and the dominant role played by the two major banks.

Another hindrance for interbank trading appears to have been the easy access to risk free bilateral deposits, in the form of repos, with the RBM. The easy access to the RBM has made it less attractive to lend funds to other banks. In addition, the high frequency of the T-bill (and RBM-bill) auctions made it less imperative for the banks to use the interbank market. While various initiatives may be considered to encourage interbank trading, a longer averaging period than one week for the liquidity reserve requirement would have provided the banks with more flexibility and opportunities to utilize the interbank market in their liquidity management. More frequent and more recent statistics on liquidity developments would also be helpful.

5. The role of the discount houses

The legal framework for the discount houses was developed to facilitate increased competition in financial markets. The discount houses were expected to be the main contributors to creating secondary securities markets in T-bills and in RBM bills. They were also assumed to be active participants in the interbank market for reserve funds. Previously, up to 10 per cent of banks' LRR could be placed as non-collateralized deposits with the discount houses. The interest rate on bank's deposits with the discount houses under the LRR is a negotiated rate. In practice, the discount houses invest most of these funds in T-bills or RBM bills, but they may also make loans to the corporate sector.

Even if the banks' deposit rate with the discount houses was close to the market rate, the LRR arrangement constituted an effective subsidy of the discount houses. The discount houses have not had any stimulating effect on the functioning of the interbank market, and their contribution to developing a secondary market in securities has also been limited. The RBM has therefore gradually brought to a halt the option that allows banks to cover up to 10 per cent of the LRR with deposits at the discount houses. Furthermore, the scope of the liquidity reserve requirement has been widened to include the discount houses.

6. Withdrawal of structural overhang liquidity

The banking sector's aggregate, structural liquidity position is determined by four factors⁵⁵ that are beyond the control of the central bank:

- Net government expenditures and revenues
- Net issuance of government securities
- Net change in currency in circulation (issuance of currency reduces bank reserves)
- Net customer transactions in foreign exchange with the central bank

The central bank will only need to withdraw a structural liquidity surplus if these factors combined over time supply liquidity. In some countries this occurred when the government budget deficit was financed by the central bank and not in the market. In countries where the government receives foreign aid, this flow of funds will result in a net injection of liquidity to the market to the extent that the funds are exchanged to domestic currency and used domestically.

Since costs associated with sterilization operations reflect the cost of conducting monetary policy within a macroeconomic context, the costs should ultimately be regarded as a fiscal problem. Consequently, it is important that arrangements are in place to ensure that the losses of the central bank are passed on to the government in a timely manner. This is important to avoid the possibility of profitability considerations taking precedence over monetary policy considerations, as would be the case if the central bank was to limit its sterilization operations to preserve its profitability.

In Malawi, the Government's policy is to finance an increasing share of eventual fiscal deficits in the market. The budget deficits should therefore, per se, not result in a sustained growth in the RM. However, more than 40 percent of the government revenue comprises grants in foreign currency. To the extent that these grants are used domestically, e.g. to pay for salaries or for other domestic expenditures, they will inject liquidity to the market and result in an upward trend in liquidity.

Issuance of RBM bills and/or T-bills may over time be used to withdraw the liquidity injection originating from domestic use of foreign grants. Foreign exchange sales may also drain liquidity from the market. To avoid that the RBM bills and the T-bills compete with each other with partly overlapping maturities, the maturity of government securities could be lengthened while

⁵⁵ Provided that the government's bank relation is the central bank

the RBM bills would be concentrated on 30 days and 62 days issues. Since the excess liquidity is strongly related to the fiscal policy, it could be argued that the excess liquidity should be mopped up with instruments issued by the Government.

The RBM has issued a 3-year RBM bond in order to mop up the structural liquidity overhang in the market. This operation increased costs for the RBM to the extent that the interest rate cost of the new RBM bond was higher than the reduced interest rate cost of banks' deposits at the RBM and of RBM bills. The costs related to dealing with a structural liquidity surplus may lead to losses for the RBM, and arrangements have been made to ensure that the Ministry of Finance (MoF) will bear the costs.

7. T-bills as a liquidity instrument

The RBM has chosen not to use T-bills as a liquidity instrument, and T-bills are only issued with a view to finance the Government. A technical advantage of using T-bills as a liquidity management instrument is that T-bills have a wider coverage than the RBM bills and repos, as everyone can take part in the auctions. Larger volumes of T-bills may contribute to a more smoothly functioning secondary market in T-bills. The development of a well functioning secondary market will require the establishment of a benchmark structure through less frequent primary auctions and the use of reopening techniques – and a well-functioning Book Entry System.

In Malawi, the yield curve is established in the primary market for T-bills, i.e. in the weekly Friday auctions. The yields on T-bill rates in the primary market move with the changes in the Bank Rate, but are otherwise fairly stable. The bidders mostly look at last week's auction result when submitting their bids. The allotted volumes of the various maturities often differ from the offered volumes, and the total allotted amount may deviate somewhat from the offered amount. The allotment decisions seem to take both volumes and interest rates into account, and this may contribute to the stability in the T-bill interest rates.

A risk related to introducing T-bills as a liquidity management tool may be that the entire yield curve could be influenced by short-term liquidity management and the uncertainty in liquidity forecasting. For example, if T-bills are used as the main instrument to mop up and fine tune liquidity around monitoring dates for the monetary targets, the more professional bidders may bid more aggressively, expecting the RBM (Government) to be willing to pay the price necessary.

In Malawi, a complicating factor is the long lags between the decision on net issuance of T-bills and its effect on liquidity. The auction process spans nearly two weeks. The decision on the announced amount and maturity structure in the T-bill auction is taken on a Friday. The auction is announced in the newspapers the following Monday, and the auction takes place on Friday. Settlement time is T+5, i.e. the following Thursday. Another (close to) two weeks must pass before any corrective action can be effected with the next T-bill auction. It may be difficult for the RBM to adjust T-bill auction volumes to liquidity conditions in the market, with the risk of contributing to volatile interest rates.

This indicates that the T-bill market may be used mainly to sterilize the structural, long-term supply of liquidity to the market, induced e.g. by the Government's domestic spending of foreign donor funds. Part of this structural liquidity may also be mopped up with foreign exchange sales, on the basis of considerations related to the development of NFAs. Hence, T-bills should not be used as a fine-tuning instrument for liquidity management.

For structural adjustment of the monetary aggregates, the RBM may make a plan for T-bill issuance that brings the expected monetary development in line with the path for the monetary targets. In principle, deviations between expected monetary developments and the monetary target path would then reflect only temporary factors, which are dominated by the (daily) fluctuations of government revenues and expenditures.

There is no yield curve beyond 9 months in Malawi, and the secondary market for government securities is not yet developed. Issues related to the government securities market were therefore not addressed in any detail in the technical cooperation project. However, the following observations were made:

- A prerequisite for developing a secondary market is to have a few outstanding benchmark issues with good liquidity. Government securities in Malawi do not have a benchmark structure as new series are introduced at every auction. One important step forward would be to significantly reduce the number of outstanding issues and the frequency of the auctions. In order to reduce outstanding issues the Government could use the reopening technique. The basic idea with the reopening technique is that the Government, for example, issues 12-month bills that are reopened when the residual maturity is for example 9 months, 6 months and 3 months. The outstanding volume will then gradually increase and when the remaining maturity is around three months, the security should have a good volume.
- After a benchmark structure is introduced, one possibility could be that the RBM for a limited period becomes a market maker in the government benchmark securities. The RBM could quote two-way prices in T-bills with maturities of 1 month, 3 months and 9 months. As the market develops, the RBM could hand over the market making to primary dealers with certain privileges and duties in the market.

III. Money market interest rate as the operational target

When the financial markets become more diversified, the central bank can rely on market prices as the operating target for monetary policy. At this stage, quantitative variables are likely to become less reliable guides for monetary policy because of increased sophistication of markets. On the other hand, price information from markets is becoming more reliable, and the central bank will need to rely on interest rates as the operating target of monetary policy. Quantitative variables may, however, be retained as information variables.

The RBM would have to move away from the RM targets and attach importance to a short-term money market interest rate as the operational target if the RBM should choose to move to a more market-based determination of the foreign exchange rate or toward an inflation targeting regime.

The primary role of the market operations would then be to implement the targeted interest rate in the money market, with a view to influencing the exchange rate or inflation directly. In this framework, the development of monetary variables would be subordinate to the operational interest rate target.

To implement the targeted interest rate in the market, the central bank usually has a standing borrowing and lending facility that forms an interest rate corridor, and a short-term instrument (repo or reverse repo) that normally trades the interest rate in the middle of the corridor. The short-term repo is usually sold at a fixed rate auction, where the fixed auction rate is equal to the targeted money market interest rate. For example, if the RBM targets that the short-term money market interest rate shall be 5 percent, it would offer repos at a fixed rate of 5 percent.

This would imply that the bulk of the central bank's transactions with the banking sector is conducted at the targeted interest rate, and that the standing facilities are mainly used by single banks as marginal facilities, e.g. due to a bank's occasional mismanagement of its liquidity. Therefore, the central bank's liquidity forecasting exercise becomes a crucial element in this policy framework as well. The central bank will have to trade the short-term repos with the banks to influence banking sector liquidity so that actual excess reserves in the banking system are roughly equal to the banks' demand for excess reserves.

IV. Framework for a more market-based mechanism for exchange rate determination

The adoption of a market-oriented monetary and exchange rate policy may be regarded as a precondition for moving toward an eventual inflation-targeting monetary framework. The authorities in Malawi have stated that they realize that over time enhanced exchange rate flexibility is needed. In the context of the technical cooperation program, the RBM asked for a project on reforms to the foreign exchange rate management that would introduce increased foreign exchange flexibility and ensure alignment with underlying fundamentals, consistent with Malawi-specific circumstances. In particular, it was emphasized that the RBM should provide adequate foreign exchange to clear the market, while ensuring that net purchases should be sufficient to meet the reserve accumulation target over the medium term. In the project, advice was provided on the framework for market-oriented foreign exchange instruments and operations that would support the authorities' reforms to move toward a more flexible foreign exchange rate policy.

1. Main features of Malawi's foreign exchange market

Even though the RBM is committed to move to a more market-based mechanism for exchange rate determination, Malawi's monetary and exchange rate policy still remains geared to maintaining moderate inflation. The RM is maintained as a key intermediate target, and the RBM continues to place weight on nominal exchange rate stability.

During the last years, the RBM has kept the nominal exchange rate vis-à-vis the USD broadly stable on a daily basis. While the IMF previously classified the exchange rate of the Malawi Kwacha as a managed float, it is now characterized by the IMF as a fixed exchange rate with rationing. Malawi has occasionally been experiencing a shortage of foreign exchange. This has created over-valuation problems, e.g. a parallel foreign exchange market, extra finance charges on delayed payments, and delayed imports resulting in lost sales and bigger inventories. In light of this, the IMF has advised the RBM and the Government to introduce a transparent fixed exchange regime, which should be implemented through announcing acceptable bands and allowing the rate to fluctuate within a band.

The RBM determines a mid-rate, which normally is the same or marginally adjusted from the day before. The RBM stipulates spot mid-rates and buying and selling rates for 32 currencies. The RBM's buying and selling rates for foreign exchange have a spread of 0.5 percent around the mid-rate. The rates are published around 8:00 am each business day, and are not changed during the day. The rates are communicated to the banks via the RBM Reuters page RBMLMW and via fax. From April 2010, the rates are published on the RBM's website.

The banks base their own buying and selling rates to customers on the RBM's foreign exchange rates. In principle, the members of the Dealers' Association have agreed to buy and sell telegraphic transfers (TT – non-cash transactions) at a fixed margin of one percent on either side of the (RBM) mid-rate – a spread of two percent. In practice, this spread is mainly applied for customer transactions, while most of the few interbank deals are conducted at negotiated rates.

Each bank posts its indicative customer rates on Reuter's pages. These rates can be seen by other banks, but not by the customers. These customer rates are valid for trades above USD 10 000. Large customers may also negotiate an exchange rate within the spread. Interbank rates are not posted on any electronic information platform.

Forward exchange rates are not set by the RBM, and the banks are free to set their own rates. A part of the forward transactions is for 3-day delivery, and functions as a parallel market reflecting a premium on the scarcity of foreign exchange. In practice, Malawi's current system of foreign exchange transactions is close to that of a multiple foreign exchange market. The forward market may be regarded as a way of by-passing the rate regulation in the spot market.

Banks deliver daily written reports to the RBM on market activities. In the reports, the banks detail the amount and the exchange rate of each transaction in foreign exchange with both customers and the few trades in the interbank market⁵⁶. The banks report both spot and forward trades. The dealers at the Treasury Department also have contacts with foreign exchange dealers via telephone and the Reuters dealing terminal. The RBM has good knowledge about the currency flows in the market.

⁵⁶ Transactions of at least USD 10,000.-, or the equivalent in other currencies.

Transactions in the foreign exchange market

The foreign exchange flows in Malawi are seasonal. In the rich foreign exchange period – the harvest season (April-September) – there is usually a significant supply of foreign exchange from exporters of agricultural products, especially tobacco. During the period September-March of each year, i.e. outside the agricultural harvest season, the RBM is usually the sole supplier of foreign exchange (the lean period). In this period the main source of foreign exchange is donor inflows that are fully surrendered to the RBM.

The large tobacco farmers mainly exchange their foreign currency earnings in a few banks, which are the dominant sellers of foreign exchange. These banks have, however, relatively few customers that are importers who want to buy foreign exchange. These banks do not typically engage in interbank trades, but offer importers the possibility of buying the currency directly from them. The Malawian banks normally do not have foreign currency credit lines with foreign banks. Accordingly, the foreign exchange market is a rather closed system based on trade flows and inflows of foreign exchange from donors.

Until December 2009, the regulations stated that all exporters, except those that are allowed to hold FCD accounts (Foreign Currency Denominated accounts), had to surrender all their foreign exchange to the RBM. For example, all smallholder tobacco farmers changed their dollar earnings into Malawi Kwacha at the National Bank of Malawi. However, 50 percent of the amount not placed in FCD accounts had to be surrendered to the RBM. The major reason for the surrender requirements was that the authorities feared a shortage of foreign exchange to finance essential imports such as petroleum and fertilizer. The surrender requirements were abolished in December 2009.

Even after the abolishment of the surrender requirements and with only trade-related currency flows, the interbank market for foreign exchange is very small. The RBM is the primary foreign exchange intermediary, and there is a large demand for foreign currency which it is unable to satisfy. In spite of the scarcity of foreign exchange, the private sector has large foreign currency denominated (FCD) deposits at the banks.

The aim of the RBM is to be a net buyer of foreign exchange for the year as a whole until the foreign exchange reserves coverage relative to imports is deemed to be sufficient. The RBM draws up a foreign exchange budget. Under the present system of exchange rate determination, the RBM does not intervene in the traditional sense to manage the exchange rate.

2. A stable foreign exchange rate within an exchange rate band

A step to introduce more flexibility in the exchange rate could be to have an exchange rate band. Introduction of a band means that the exchange rate is permitted to fluctuate around a midrate and within a margin. The central bank may intervene to prevent the rate from moving beyond the margin. The central bank may also intervene to smooth short-term volatility, even if the rates are still within the band. The actual transactions in the market will normally take place at trading spreads that are well inside the band. An example of a band arrangement was the

European Monetary System, which – before the adoption of the euro – operated with margins ranging from 2½ percent to 15 percent.

A necessary condition for the introduction of an exchange rate band is that the midpoint of the band is in line with market conditions. Otherwise, there is a risk that the market exchange rate immediately moves to one of the margins of the band. For example, if the midrate at the time of introduction is perceived by market participants to be too strong relative to fundamental factors, the market exchange rate would soon depreciate to the weaker limit of the band. That would undermine the credibility of the band, and the central bank would experience the same challenges as in a fixed-rate system.

In case of a low level of international reserves, a tight band would not be credible. There would be a risk that the central bank will be forced to be “running after the market” and change the band mid-rate frequently. The band should be wide, maybe with margins of 10 – 15 percent.

Over time, as the level of international reserves is increased, it could be more realistic to manage a band with tighter margins. However, the general experience in several countries, including Norway, is that managing a tight foreign exchange rate band only based on interventions is difficult. Other policy elements (fiscal policy, interest rate level, etc) must support the foreign exchange rate stability.

A wide band would function mostly as a signaling device, by which the authorities inform market participants about where they expect the rate to be. The band could be marketed as a “soft band” where the central bank would only intervene with limited amounts in its defense. If the market exchange rate moves to the weaker limit of the band, the central bank may try to intervene with small amounts and increase interest rates (and fiscal policy should be tightened). The authorities, however, should be ready to move the mid rate in a flexible manner, before it looks like a “defeat” to market forces. If the market rates move to the stronger limit, the central bank could intervene with larger amounts. However, an excessive supply of liquidity to the market may threaten the target for, e.g. the RM and be costly to mop up.

In order to have a signaling function and help foreign exchange dealers in their rate determination, the band has to be published, and not only kept internally. Establishing a band does not mean that the banks’ trading margins are increased. The regulated trading margin could still be kept at e.g. +/- 1 percent, but possibly reduced over time. Eventually, the regulation of trading margins could be abolished.

V. Transition towards enhanced exchange rate flexibility

1. Promotion of an interbank market for foreign exchange

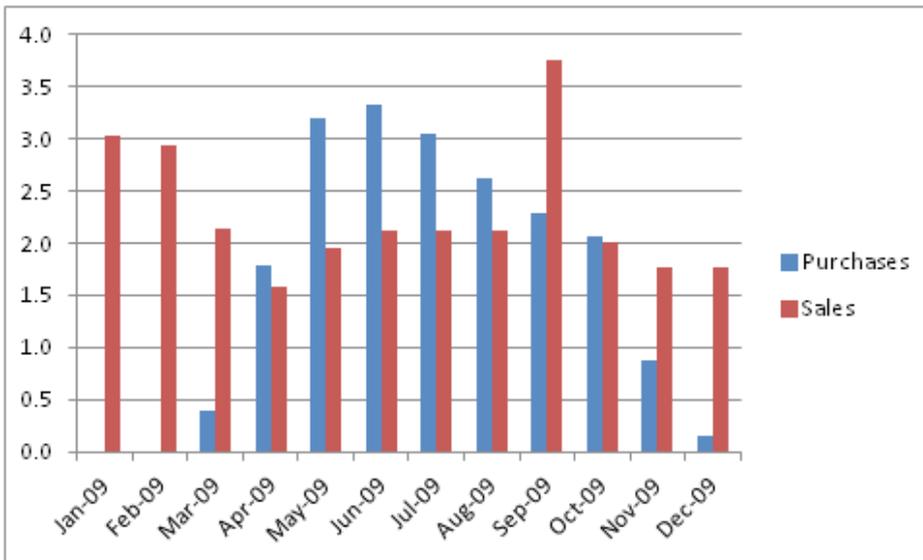
In Malawi, a revival of the interbank market primarily depends upon a relaxation of the surrender requirement, and on the RBM having a less dominant position in the foreign exchange

market. The RBM must make room over time for the banks to quote two-way prices in the interbank market. Another major obstacle to a well functioning market is the clear seasonality of the foreign exchange flows.

Seasonality

As discussed above, the inflow of currency in Malawi is seasonal. In April/May – August the market is dominated by sellers of foreign currency, notably from the tobacco auctions. The rest of the year the market is dominated by buyers of foreign currency. This demand for foreign exchange is less seasonal, except for foreign currency demand from fertilizer importers, which is concentrated in the month of September. The most balanced months are April, October and August.

Graph: RBM purchases and sales of foreign exchange. Average per trading day, given 21 trading days per month. Million USD. (Includes foreign exchange received through the surrender mechanism). Actual/planned for 2009.



This seasonality is problematic for potential market makers in Malawi Kwacha. The seasonality can be reduced by the following measures:

- Some suppliers of foreign exchange can be kept out of the market. Parts of the export earnings can be channeled directly to the RBM at the actual market price. Such arrangements have been used in some countries with large government export enterprises. In Norway, for example, such arrangements are used to channel part of the Government’s foreign exchange income from the petroleum activities directly to the Government Pension Fund.

In Malawi, a parallel would be that a part of the tobacco export earnings are channeled to the RBM to cap the overflow of foreign exchange in the period May – August. Such an arrangement could be in place until the market becomes more balanced as the economy diversifies over time. The transactions, of course, have to be booked at the market price for foreign exchange, and there must be general confidence that the market price is not manipulated. However, removing large volumes of transactions from the market impacts the market price.

- A possibility may be to shift the timing of some demand for foreign exchange. Large importers of critical goods could be encouraged and maybe given assistance to partly secure their need for foreign exchange in the period with ample supply of foreign exchange. With reference to the chart above, significant smoothing of net seasonality would occur if fertilizer importers bought some of their foreign exchange in the months preceding September. Without a well functioning forward market, the importers would have to buy the foreign exchange spot and keep it, for example, in FCD accounts until it is used to pay for imports. However, this would require financing possibilities in Malawi Kwacha for fertilizer importers.

Such measures must be calibrated so they do not reduce the trading volume in the interbank market to the extent that market reform is undermined.

Price discovery

The RBM would have to move to a situation where the exchange rates are determined to a larger extent by supply and demand in the interbank market. The authorities could influence the longer term development of the exchange rate indirectly through their interest rate policy, fiscal policy and through income policy/wage settlements, and in the short term by interventions. The price discovery could take place through:

- bilaterally negotiated trades between two banks, where average rates are supplied to the market by, e.g., the RBM
- the RBM as a market maker
- two-way foreign exchange auctions arranged by the RBM
- individual banks' price quotations on electronic information systems (e.g. Reuters)

The long-term goal for market development should be that individual banks quote exchange rates on electronic information systems (e.g. Reuters). In the short term, the market is too shallow for banks to quote prices on a continuous basis. An alternative is a system where banks negotiate rates valid for amounts up to USD 50 000, and report trading rates and volumes to the RBM. The RBM would then publish the volume-weighted average foreign exchange rate or the median rate. The crucial point is that a bank is not obliged to trade with a bank that is making a telephone call. A regular market making arrangement where a bank that quotes a rate is obliged to trade, could be seen as too risky as long as the financial market in foreign exchange is close to nonexistent.

A second alternative in the short term could be that the RBM became a market maker and quoted two-way prices in Malawi Kwacha/USD with a certain spread. The spread should be quite wide to make it possible for banks to trade within the central bank spread.⁵⁷ The RBM should move the rate when other banks are “hitting them” in the market. In that way the rate would move with the demand and supply of foreign exchange. The adjustment of the rate must be adapted so that the RBM becomes a net buyer or seller of foreign exchange in line with the planned build-up of reserves. If the rate moves to the margins of an exchange rate band, the RBM would have to stand firmer on the rate they quote. However, such an arrangement could cause confusion between the RBM’s market-making trading spread and the band (band within the band).

A third alternative could be that the RBM conducts two-way foreign exchange auctions – fixing sessions – where the RBM both sells foreign exchange to some banks and buys foreign exchange from other banks on the same day. A problem with foreign currency auctions could be the limited number of potential bidders. Especially in periods with excess foreign exchange, the surplus may be concentrated to a few banks. This could lead to high rate volatility in foreign exchange auctions. However, the introduction of an exchange rate band would give the foreign exchange dealers helpful information about the range where rates are expected to be. The RBM could also be prepared for some time only to accept bids within a tight margin of the band mid-rate. This highlights that a possible band arrangement can only function if the mid-rate is aligned with market fundamentals. The possible auctions could have the following format:

- The auction should be announced on the RBM’s Reuters page (or via e-mail) when the market opens with a fixed cut-off time for bids. The cut off time should be during the most active trading session, which in most markets is the morning session.
- The price (exchange rate) should normally be open and not announced by the RBM
- The auction volume could be announced or be open
- Banks were allowed to make multiple bids. To ease the RBM’s administrative burden and speed up the auction process, a maximum of e.g. five bids might be allowed.
- The RBM might set a minimum amount per bid, e.g. between USD 20 000 and USD 50 000.
- As soon as the RBM had accepted the auction result, the RBM should announce the result on its Reuters news page providing the following information:
 - Allotted amount
 - Cut off exchange rate
 - Allotment ratio for bids at the cut off rate.

A two-sided auction would mean that the RBM was willing to receive bids both to buy and sell foreign exchange in the same auction.

When the interbank market was deemed to have sufficient depth, the RBM could encourage bank’s participation in the interbank market by limiting its trading (either in direct trades to manage the rate or through regular auctions) to banks and possible other institutions that quote two-way prices in the interbank market for certain minimum amounts on an electronic

⁵⁷ This RBM trading spread could be +/- 2 percent and conceptually different from the band width of e.g. +/- 10-15 percent.

communication platform. The minimum amounts should be quite low, e.g. USD 50 000, to make it possible for institutions other than the largest ones to participate. The quotes could be binding for the minimum amounts, while the larger banks may voluntarily also quote indicative prices for larger amounts. The maximum spread could be decided by market participants. When larger customers were trading larger amounts, the exchange rate would normally be negotiated.

To develop the interbank market it will be essential that the RBM's role in the market over time is more limited than today. It must be a price taker in the market, either through direct trade with the banks or through the auctions. A possible market maker role should only last for a limited time. To make the market more transparent, the RBM should publish on its website and advertise in the newspapers the average (or median) mid-rate and average buy and sell rates in the interbank market or the auction results. It is important that a new RBM policy is transparent and clearly communicated to all relevant parties.

2. Central bank transactions in a more flexible foreign exchange rate system

In a more flexible exchange rate system and with an RBM target to build reserves, the foreign exchange transactions of the RBM would have two different objectives that should be clearly separated.

- The first objective would be to buy or sell foreign exchange in order to increase international reserves according to a foreign exchange budget
- The second objective would be to ensure orderly market conditions and, when deemed necessary, manage the exchange rate band, through
 - interventions at the margins of the band, and possibly
 - interventions to smooth excessive rate volatility within the band

As summarized in the table below, depending on whether a central bank is “in the market” to increase reserves or to manage the exchange rate (intervention policy), the central bank's objectives with regard to providing signals to the market are fundamentally different. It is important that market participants can distinguish clearly between transactions aimed at increasing reserves and transactions aimed at managing the exchange rate (interventions). This suggests that the central bank should use different trading techniques when it is only mopping up foreign exchange reserves and when it is trading to manage the exchange rate.

Table: Possible Objectives of RBM Foreign Exchange Transactions

	Increase international reserves	Intervention to manage the exchange rate
Signals to the market	To be avoided	Most important
Impact on exchange rate	To be minimized	To be maximized
Amount to be sold	Planned and may be disclosed in advance	Unpredictable, cannot be planned or announced
Expectations of the market	Predictable	Surprise

Exchange rate interventions at band margins

Traditional foreign exchange interventions must often be carried out at short notice and they are normally not planned in advance by the central bank. The central bank might want to maximize the surprise element. Therefore, such interventions cannot be carried out via an auction process that has to be planned and announced in advance. The occasional foreign exchange interventions should therefore be conducted via bilateral telephone calls to the market. The bank trader called by the central bank then knows that the central bank is intervening in the market to influence rates. With several telephone lines and dealers, the central bank might quickly convey its signals about the exchange rate to the most important market participants. This trading strategy would then clearly differentiate the exchange rate managing transactions from the planned and regular auction transactions to increase reserves.

Regular transactions to build reserves

The foreign exchange transactions used to build up international reserves have only one major objective: to buy and/or sell foreign exchange to the market in a way that corresponds to a preagreed plan for the buildup of reserves. They should not be designed to manage the exchange rate in the short term. As summarized in the table above, the foreign exchange trades to increase reserves should be designed to (1) have minimum effects on the exchange rate; (2) avoid as much as possible sending any signals to the market about the central bank's view on the exchange rate level or development; (3) disclose well in advance the nature and size of the central bank's transactions so that they are predictable to the market; (4) avoid affecting the market's expectations about the future development of the exchange rate. The transactions should then be conducted in a transparent and predictable manner, so that market participants can take this demand/supply into account when they form their rate expectations.

The regular transactions should be planned so that the central bank over time achieves its target for the international reserves. The transactions could in principle be rule-based constant purchases of currency, where the central bank over the year bought the same amount of foreign exchange each day or at regular intervals. This is easy to implement, easy to establish credibly and very visible to the market and will help anchor market expectations. A possibility is also to

adjust the transactions to perceived market movements, in an ad hoc way. However, this may be misunderstood as exchange rate managing interventions.

In the case of the RBM, a better approach would probably be to announce that it intends to let the transactions follow the seasonal pattern as long as the pattern was viewed as stable and predictable, without necessarily announcing the exact figure. To announce the amount could be difficult in circumstances with thin markets and uncertainty about the availability of foreign exchange in the market. This will imply that the RBM sells or buys a certain amount (depending on the net balance in the market) each day or at fixed intervals during e.g. one month. From period to period the purchases/sales should be adapted to the seasonal supply/demand in the market. Even if these trades are not intended to manage the exchange rate, they will contribute to stability in the exchange rate because they contribute to more balanced foreign exchange flows. As discussed above, auctions cannot so easily be used for intervention purposes. The auction format could then be reserved for the regular transactions to increase reserves.

3. Sequencing of reforms

The introduction and announcement of a foreign exchange rate band (mid-rate in line with demand and supply of foreign exchange and margins) could be the first element in a new policy toward a more market-oriented foreign exchange rate regime. When the foreign exchange flows relate mostly to the seasonality in the current account and donor flows and a nearly nonexistent financial market for foreign exchange, a cautious reform process regarding the central bank's role in the exchange rate determination and the development of the interbank market would be preferable. It might be necessary for the central bank to have a central but more flexible role in the rate formation for some time.

The period after the introduction of the band (new mid-rate and margins) should be utilized for consultations with market participants. The authorities should in a transparent manner explain and substantiate the new policy to market participants, the mass media, the banking sector, the business community, etc. The reforms of the foreign exchange policy should consist of a package of steps. The main elements could be:

- 1) Adjust the exchange rate to a level consistent with demand and supply of foreign exchange.
- 2) Introduce a published foreign exchange rate band where the rate is allowed to float within (soft) limits. The midpoint of the band must be consistent with market conditions and the size of the band should be wide.
- 3) Abolish parts of a possible surrender mechanism, and present a plan for further reductions⁵⁸. However, the authorities could look for possibilities to channel some part of the foreign exchange supply directly to the central bank, or shift the timing of some foreign exchange demand to reduce the seasonality of the net foreign exchange flows.

⁵⁸ The surrender requirements were abolished in December 2009.

- 4) Announce that the central bank intends to increase its international reserves via regular foreign exchange auctions. These transactions would be calibrated so that they contribute to balancing the seasonal flows in the market. The central bank should buy/sell the net excess/deficit in the market, on the condition that the foreign exchange rate adjusts so that over the year the planned increase of reserves materializes.
- 5) Announce that from time to time the central bank may intervene in the market to smooth short-term volatility or hinder the rate from moving outside the band.
- 6) The central bank eases exchange rate management.
- 7) The central bank should gradually interact on a more “hands off” basis with the foreign exchange market:
 - a) The central bank should conduct two-way auctions in foreign exchange with open volume and price, with all authorized dealer banks. The auctions could be held at the beginning of each day.
 - b) The central bank should consult with market participants about initiatives to promote the interbank market. As a first step banks could negotiate rates for the trades between themselves and report trading volume and foreign exchange rate to the central bank. The central bank could then publish the volume weighted average or median trading rates. As the market matures, banks could quote prices on electronic platforms.
- 8) After a short period, the central bank should start regular purchases and sales in the market in order to increase over time the international reserves. This can be done with:
 - a) One-sided, weekly auctions with both open volume and price where participation, after some time, may be limited to banks that quote two-way prices on an electronic platform for a certain amount (e.g. USD 50 000). After a certain period, auctions could take place less frequently.
 - b) Or, trading at the bilateral rates that are formed in the market

Deciding when the auctions should be held less frequently will be a matter of judgment. This will depend on the functioning of the interbank market. As long as there is a need to build reserves or smooth the seasonality in foreign exchange flows, the central bank should have a regular presence in the market with transactions that can be distinguished clearly from exchange rate managing interventions. These steps are closely interlinked as both building reserves and developing the interbank market would be difficult without a flexible exchange rate in line with market fundamentals.

Chapter X

Foreign Exchange Reserve Management

Steinar Selnes⁵⁹ ⁶⁰

I. Background

Malawi's foreign exchange reserves are owned and managed by the Reserve Bank of Malawi (RBM). The RBM Act (1989) stipulates that one of the principal objectives of the RBM is:

“to maintain external reserves so as to safeguard the international value of the Malawi currency.”

The RBM is the only institution which is entitled by law to manage, use and dispose of these external reserves. The RBM Act establishes that the RBM shall manage external reserves and maintain foreign exchange reserves at a level which is adequate for Malawi's international transactions. The composition of the foreign assets may include: gold, special drawing rights of the International Monetary Fund, foreign reserves in the form of deposits with central, correspondent and other banks, and other financial assets in foreign currency.

Like most other central banks, the RBM holds external reserves in accordance with liquidity and safety principles. Subject to compliance with the two principles, the RBM invests external reserves with the goal of optimizing the return over the long term. The main objective of the RBM's foreign reserves policy is to ensure availability of liquid external reserves necessary for effecting international payments and currency interventions in the domestic foreign exchange market.

Enhanced exchange rate flexibility is expected over time, and the RBM has therefore been considering reforms to the foreign exchange rate management that would introduce more flexibility and ensure alignment with underlying fundamentals, consistent with Malawi-specific circumstances. Hence, the RBM has been reviewing its guiding principles of foreign reserves management. A main purpose of the technical cooperation project on foreign exchange reserves management in May 2009 was to review the RBM's reserve management policy, and provide advice on ways to strengthen it further in accordance with best central bank practices and standards.

⁵⁹ Steinar Selnes was MCM/IMF short-term expert, and is Senior Advisor, Control and Compliance Department, Norges Bank Investment Management.

⁶⁰ We wish to thank Han van der Horn and K. Fujita of the MCM/IMF, Neil Nyirongo, Executive Director of Economic Services, Director Henry Mathanga and staff of the TRD for helpful comments.

II. Institutional arrangements for reserve management – best practice

A common governance structure that applies across most central banks is a formal three-tier hierarchical arrangement where the Board of Directors (Executive Board) sets the overall objectives and strategy for the reserve management:

- Typical issues addressed by the highest level of management (Board of Directors at the RBM) include the broad currency composition of reserves, permissible instruments, acceptable credit quality, and overall interest rate exposure.
- The second level of management in many central banks is an Investment Committee (IC), which is responsible for translating the strategy into operational guidelines by laying down benchmarks, approving permissible deviations from benchmarks, markets and instruments, and for setting a framework for allocation of funds between portfolios. In the RBM, the Asset and Liability Committee (ALCO) plays the role of the second level of management.
- At the third level, the Foreign Exchange Reserves Management Department (the Treasury Department at the RBM) is responsible for actually implementing the investment strategy within limits defined by the second level of management.

To reduce the risk of fraud, separation of functions at the operational level is a fundamental requirement in all investment operations. Most importantly, there should be complete separation of those who initiate transactions (front office) and those who arrange the settlement of transactions (back office). At the RBM, the front and back office report to different functional areas. Most central banks (or public entities at large) tend to choose in-house back office operations, that are often more costly than outsourcing the services. The outsourcing alternative could be relevant for the RBM in the future. However, given the current reserve level of the RBM, an outsourcing of the operations would probably be of limited relevance and the potential for cost efficiency would be modest.

In general, a check or control should be administered by someone who is independent of the person being controlled. In many central banks, the middle office function is responsible for controls, reconciliations and for measuring risk and performance of the reserve management. In order to avoid conflict of interest, in many cases the middle office has a different reporting line from the front and back office. At the RBM, the front and middle office report to the same director level.

In general, most central banks put significant emphasis on well documented operational procedures and have manuals in place detailing all operational procedures in the front, middle and back offices. Functional responsibilities should be clearly identified, and job descriptions should be in place for all functions. In many cases, front office dealers should be subjected to a professional Code of Conduct, adhere to standards for ethical conduct in financial markets and be subject to conflict of interest guidelines.

III. The RBM’s framework for foreign exchange reserves management⁶¹

1. Internal governance structure

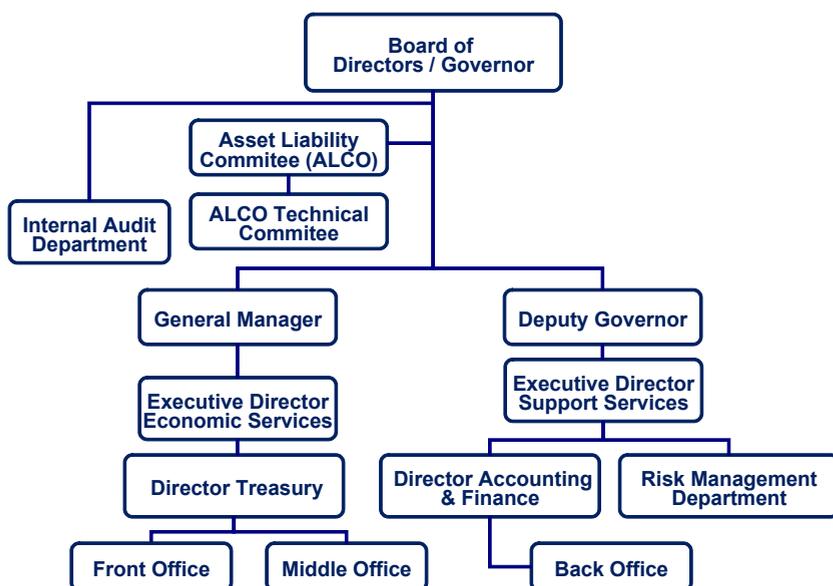
The RBM’s internal foreign exchange reserves management system consists of the Board of Directors, the Asset and Liability Committee (ALCO), the Treasury Department (TRD), the Accounting and Finance Department (AFD) and the Internal Audit Department (IAD).

In general, the Board of Directors defines the overall policy of foreign reserves management, sets overall strategy for the reserves management function by approving investment parameters, and delegates execution of reserves management operations to the senior management of the RBM.

ALCO’s mandate is to monitor and evaluate the compliance with investment strategies, the implementation of foreign exchange reserves management policy with special focus on issues related to risk management, and to submit to the Board of Directors reserves management issues/proposals for decision making.

At the operational level, the TRD is responsible for day-to-day implementation of foreign exchange reserves management and preparation of periodic reports on foreign reserves management. Segregated activities are performed in the front and middle office of the TRD and the back office of the AFD.

Foreign Exchange Reserves Management Organizational Structure



⁶¹ The RBM has drafted a Foreign Exchange Reserves Management Policy Document with high level guidelines and objectives that will be presented to the Board of Directors for approval.

2. The Asset and Liability Committee (ALCO)

The ALCO was established in 2006 with responsibility for the entire balance sheet of the RBM. This may be regarded as a "bank" approach to monitor the operations of the RBM, and the committee reviews all major income and cost items of the bank. In addition to foreign exchange issues, it also deals with the impact of changes in domestic assets and liabilities on the profit and loss of the RBM. The committee is supposed to meet monthly, and the General Manager heads the committee. Other members are the Executive Director Economic Services, the Directors from the AFD, the Banking and National Payment Systems Department (BPSD), the Bank Supervision Department (BSD), the Exchange Control and Debt Management Department (ECDM), the Strategy and Risk Management Department (SRD), and the Currency Management Department (CMD). The Director of the TRD is the Secretary of the ALCO.

The ALCO is responsible for a number of issues in addition to the management of foreign exchange reserves; e.g. balance sheet risk which could be taken care of by the Risk Management Committee, provided that the composition of this committee was somewhat changed. Some of the members of the ALCO come from areas of the RBM with no responsibility for reserve management, and it may therefore be difficult for the ALCO to function properly even in the area of reserve management. In the project report it was pointed out that an alternative approach to ALCO would be to establish a separate Investment Committee (IC) with a more narrow and targeted membership and with its responsibility limited to foreign exchange reserve management issues.

A well-functioning IC will require members who are familiar with the technical details of investment management. Without these skills the committee will risk having discussions that are uninformed. The IC should have senior management members who can coordinate the reserves policy with the central bank's other activities. The position of committee chairperson is very important. The chairperson acts as the channel of communication between the market staff on the one hand, and the Board of Directors and other stakeholders on the other. The ability to explain technical issues to non-technical people, and vice versa, is essential.

In the case of the RBM, the committee should be headed by the General Manager. The Executive Directors from Support Services and the Economic Services, and the Directors from the AFD, the SRD and the TRD would be the most relevant members. The TRD's middle office typically acts as the secretariat of the IC to ensure that the decisions of the committee are implemented in accordance with investment guidelines. The middle office should also prepare parts of the IC background paper.

Examples of core responsibilities for the IC:

- Lay down the technical specification of the benchmarks, the deviation limits, principles for rebalancing the benchmarks
- Establish the framework for transfers between portfolios (tranches)
- Receive and discuss the reports on performance, risk and compliance from the Treasury Department.
- Approve new instruments and all important issues related to reserve management
- Review and comment on the reports to the Executive Board

3. Institutional arrangements at the RBM

The Terms of Reference for the RBM's middle office are broadly in line with the functions performed by middle office and/or compliance departments at other central banks. The middle office of the RBM is subdivided into three sections with the following main responsibilities:

i. Compliance Section

- Monitor compliance with investment guidelines for both internally and externally managed funds and notify the senior management of any breaches or any other exceptional events relating to market operations (implementation of monetary and exchange rate policies) and investment operations (foreign reserves management)
- Reconciliations (nostro accounts, open market accounts, portfolio accounts, foreign payments and receipts)
- Operational risk and internal control issues
- Ensure that domestic financial market players are compliant with applicable directives and guidelines (regulatory compliance)

ii. Performance Measurement and Risk Analysis Section

- Calculate returns on both actual portfolios and benchmarks
- Risk monitoring and measurement (market and credit risk)
- Risk and performance reporting to senior management
- Documentation
- Secretariat for the ALCO

iii. Market Analysis and Liquidity Forecasting Section

- Liquidity forecasting
- Gathering and analysis of market data
- Drafting of monetary policy and other technical papers
- Prepare proposal for strategic asset allocation

The RBM's middle office has been assigned a fairly wide range of responsibilities with tasks including control, measurement, reporting, and analysis. It advises on strategic asset allocation of foreign exchange reserves, prepares reports on portfolio performance of the front office and on developments in the financial markets, and handles reconciliation functions. The middle office is also responsible for liquidity forecasts. In connection with the technical cooperation project on monetary and foreign exchange operations (see Chapter IX), it was recommended that the RBM should consider organizing the functions related to market operations and foreign exchange reserves management in two separate offices within the TRD. Furthermore, in order to ensure independent controls and measurements, some central banks have decided that the compliance or control units and risk and performance measurement units report to a senior management level other than the Director of the TRD.

It is important to establish an independent control environment, but in most cases it is also crucial for the staff working in these sections to be in close contact with the activities of the front office. The middle office staff should have a very good understanding of the instruments and type of transactions being processed in both the front and back office. If the control functions are located too far from the front office, it will be difficult to build necessary skills and competence.

In some central banks, the compliance unit has dual reporting lines. At Norges Bank Investment Management (NBIM), the Head of Compliance reports both to the Head of NBIM and to the Governor. It was recommended that the RBM establishes a similar setup. This would require that the RBM introduces dual reporting lines from the compliance and risk and performance sections of the middle office to both the Director of the TRD and to the ALCO (or the new IC). The documentation of policies and procedures regarding management of the reserves should be updated and included in a single document.

Independence is also important for the work of the Performance Measurement and Risk Analysis Section. This is especially the case when it comes to principles for portfolio valuations and performance calculations of both actual portfolios and benchmarks. To eliminate any suspicion of “favourable pricing” or of losses being hidden, this work should be carried out on an independent basis from the front office.

Price sources and methodology for calculating performance should be decided by the ALCO and not by the front office.

An important element of any governance framework is that the policies and procedures are clearly understood by all staff involved in the process. This is best achieved by documenting all aspects of the investment mandate as well as all operational controls in a single document at the Treasury Department. Specifically this documentation should include:

- The reporting lines and responsibilities of all functional areas involved in the management of the foreign exchange reserves.
- All limits extended to portfolio managers.
- Details of the benchmark and systems/methodology used for performance measurement and attribution.
- The list of all authorized instruments and any limits that may apply to them.
- The criteria/procedures for the selection/exclusion of trading counterparties.
- The maximum credit exposures permitted with each counterpart
- Details of the methodology for measuring risk exposures (both market risk and credit risk).
- Clear procedures for notifying senior management of limit breaches or any other ‘exceptional’ events relating to the reserves management process.

Procedures for how changes in the investment mandate are effected, such as a proposal for the introduction of a new instrument, should also be established. These procedures need to include which level of senior management is authorized to approve changes and which functional areas need to be consulted before changes can be implemented.

IV. The RBM's reserve management policy

1. Investment guidelines

The RBM has divided the reserves into three portfolios, or tranches, in line with major functions of foreign exchange reserves as follows:

Tranche name	Tranche Size	Objective	Investment Horizon	Comments
Working Capital	One month of import cover	To meet daily transaction needs	30 days	All balances in selected operating accounts shall constitute this tranche
Liquidity Tranche	Between 1-3 months of import cover	To meet fund transaction accounts and for foreign exchange interventions	90 days	The size of this portfolio shall be at least 2 months of the country's import needs
Investment Tranche	More than three months of import cover	To fund the liquidity tranche and earn a fair rate of return	3 years	Size shall be more than 3 months of the country's import needs

It is relatively common for central banks to subdivide their reserves into portfolios based on expected liquidity needs over different time horizons. Such portfolio tranching allows the central banks to define objectives and benchmarks for each portfolio, such as transactions or working capital portfolio, liquidity and investment portfolio. The transactions and liquidity portfolios usually consist of currencies required for transactions and interventions, and the investment portfolio consists to a larger extent of diversified currency portfolios based on other considerations.

When deciding on a multi-tranche approach, consideration needs to be given to the size and relative stability of the foreign exchange reserves. A multi-tranche approach would be more appropriate in the case of a central bank that experiences large fluctuations in the size of its reserves, for example as a result of interventions or from the sale of a national asset.

On the other hand, in the case of countries where the size of foreign currency reserves is relatively stable, a single mandate that meets all security, liquidity and return objectives can be readily designed. Even in the case of countries where the level of reserves is variable, a single investment mandate may be more practical as it would eliminate the need for regular and potentially costly rebalancing of the portfolios and transfers between the tranches.

The main objective of the current RBM foreign reserves policy is to ensure availability of liquid external reserves necessary for effecting international payments and currency interventions in the domestic foreign exchange market. While the current level of reserves is relatively low, the envisaged future increase will make it sensible to establish a separate investment tranche with guidelines that focus more on the return objective. Both the investment universe and the risk parameters should be adjusted accordingly. The RBM could, however, reconsider if there is need for both a working capital and a liquidity tranche. They are both tranches with short-term investments with similar purposes; to serve short-term transactions. It may therefore appear more appropriate to combine the two tranches into one liquidity portfolio. In that case, the RBM could reduce the cost of maintaining three benchmarks, performance calculations, costs of rebalancing and transfer of funds between tranches.

2. Investment universe

The RBM limits foreign exchange investments to the following main categories;

- Deposits with banks, central banks and supranational institutions;
- Fixed income securities (including bonds, notes, bills and short-term discount notes/commercial paper) issued by sovereigns (including directly guaranteeing agencies), central banks, government supported entities and supranational institutions;
- Repurchase agreements;
- Commercial paper and certificates of deposits issued by private sector entities;
- Gold
- International Monetary Fund (IMF), Special Drawing Rights (SDR)

Country list

The RBM's foreign exchange reserves may be invested in fixed income instruments issued by institutions from a restricted number of countries. As for most central banks, the safety of the investments is one of the main considerations. The investment universe and the restricted country list are quite standard for many central banks, and constitute an appropriate high level policy guideline for the RBM.

Currency Risk

In the RBM's Foreign Exchange Reserves Management Policy Document, it is stated that the reserves shall only be held in some specific foreign currencies. When selecting the currency composition of the foreign exchange reserves, consideration needs to be given to the ultimate objective of holding the reserves. If reserves are being held for intervention purposes, the intervention currency(s) of choice may need to be relatively overweight in the portfolio. On the other hand, if foreign currency reserves are being held as a hedge against official or non-official foreign currency liabilities or are funded with foreign currency loans, it may be appropriate to match their currency composition. If foreign exchange reserves are used to fund imports or cover current account deficits, consideration should be given to a currency composition that reflects the currency composition of imports.

With the current peg of the Malawian Kwacha to USD, most of the transactions in and out of the RBM’s foreign exchange reserves are denominated in USD. It would therefore make sense to keep a relatively large portion of the reserves in USD. If a more flexible exchange rate regime is introduced and the level of reserves increases, a more diversified currency composition should be considered. The currency composition of the investment portfolio might then be tilted more towards the composition of imports, based on i.e. the IMF Direction of trade statistics or REER weights, while the USD should be given a stronger weight in the liquidity portfolio.

The currency composition benchmark for each portfolio should be reflected in the Board of Director’s investment guidelines as mid-points reflecting the reasons for which the reserves are held. Around these mid-points, central banks normally allocate minimum/maximum band (e.g., +/- 5 percent on each side of the mid-point) for each eligible currency. This band allows for operational efficiency and minimization of transaction costs, as exchange rates change. How wide this band should be should be determined by the IC. The actual currency composition of the reserves should be calculated daily by the middle office, and the risk management framework should ensure that the RBM operates within the minimum and maximum positions stipulated in the currency benchmark.

It was recommended that the RBM establishes a currency composition benchmark for both the liquidity and investment portfolios with minimum/maximum deviations from a mid-point for each eligible currency. The Board of Directors should establish the mid-points, and the IC should establish the deviation band. The table below illustrates a possible framework for the management of currency (risk in percent of total reserves, excl. gold). The currencies and the numbers are examples, and not actual proposals.

Currency	Minimum	Mid-point	Maximum	Deviation band
US dollar	65	70	75	+/- 5
Euro	10	15	20	+/- 5
Pound sterling	5	10	15	+/- 5
Japanese yen	0	5	10	+/- 5

Interest rate risk

The most commonly used measure for interest rate risk in central banks is modified duration. Modified duration measures the sensitivity of the price of a security to a small movement in the yield. The measure is quite easy to calculate and can easily be aggregated into the duration of a fixed income portfolio. The target duration depends on the risk-return preference of the central bank, and should ideally be derived from the expected horizon of the reserves in a worst case BOP scenario. A marginal extension in duration generally generates greater expected return, but also carries with it higher volatility of returns. Central banks are typically concerned about negative returns and the duration target is in many cases set low to reduce the probability of capital loss over the investment horizon.

A formal benchmark for interest rate risk for the investment portfolio should be part of the Board of Directors' guidelines. In the high level policy guidelines, the RBM has a duration target of 30 days for the working capital, 90 days for the liquidity tranche and 2 years for the investment tranche. If the RBM decides to combine the working capital and liquidity tranches, the interest rate risk of the liquidity portfolio could be controlled more strictly by introducing an explicit investment universe (e.g. only demand deposits, short-term government bills, and repurchase transactions are permitted).

The report recommended that a benchmark with minimum/maximum deviations from a mid-point duration for each eligible currency should be established for the investment portfolio of the RBM. The mid-points and deviation bands should be proposed by the IC and approved by the Board of Directors. Procedures and principles for rebalancing the benchmark back to the strategic mid-points should be proposed by IC and approved by the Board of Directors.

An illustration of such benchmarks is shown in the table below. Numbers are examples only, and not actual proposals.

Market	Minimum	Mid-point	Maximum	Deviation band
US dollar	1.75	2.0	2.25	+/- 0.25
Euro	1.75	2.0	2.25	+/- 0.25
Pound sterling	1.75	2.0	2.25	+/- 0.25
Japanese yen	1.75	2.0	2.25	+/- 0.25

Credit risk

The investment guidelines should have clear provisions concerning the management of credit risk. The investment guidelines need to consider bank risk, sovereign, supranational and agency risk and counterparty risk, and assess these risks on the basis of credit ratings from the major rating agencies.

Bank risk

Exposure to bank risk arises from time deposits, current accounts, investment in certificates of deposit, and foreign currency operations. Management of this risk reflects two elements.

- First, the maximum level of overall exposure to bank risk should be established. This may be a function of the liquidity needs and the overall tolerance for bank risk. Levels up to 30 percent of total reserves have been common among central banks. Following the financial crisis many central banks have reduced their bank exposure substantially. This percentage also depends on the size of the reserves and the capacity to invest in alternative instruments. Guidelines on the maximum maturity of deposits, and how this is related to the limits (e.g. a higher maximum for short-term deposits than for longer-term deposits) has to be established.
- The second element involves individual exposure limits for each bank. The bank ratings from Fitch are typically being used, but these ratings may be complemented by ratings from

S&P and Moody’s Investors Services. The RBM should construct a matrix in the investment guidelines to reflect nominal exposure limits as a function of ratings. A procedure should be established when the two agencies have different ratings.

The credit risk guidelines should be included in the investment guidelines and each eligible bond issuer, deposit taker and investment counterpart should be identified in a “positive list” to be appended to the investment guidelines. This establishes a framework against which compliance can be observed.

Framework for bank exposure limits:

Long-term credit rating from rating agency		Maximum Exposure to Bank (US\$ equivalent)
S&P	Moody’s	
AAA	Aaa	X million
AA+	Aa1	Y million
AA	Aa2	Z million

A separate exposure limit should be established for repurchase agreements. It is common to accept counterparties with a rating of AA3/AA- or better. However, if AAA-rated collateral is received, the maximum allowable line will be equivalent to that of an AAA-rated bank.

It was recommended that the RBM introduces a framework for setting exposure limits for banks based on credit ratings. The RBM should set both a maximum exposure limit for banks as a group and the maximum maturity time deposits.

Sovereign risk, supranational and external financial institution risk

- Government bonds with an AAA-rating are considered default free (as opposed to commercial bank deposits). Thus, the RBM should grant generous (even unlimited) exposure lines to AAA-rated government bonds in the major markets in which the reserves are invested. Risks related to AAA-rated central banks may be incorporated within the allocation of lines to their respective governments.
- For ratings below AAA, the exposure limits should gradually be reduced to reflect the higher credit risk. The RBM should construct a matrix in the investment guidelines to reflect this.
- Specific lines should be put in place for explicitly-guaranteed government agency and supranational issuers reflecting their respective credit ratings. Typically, the government agencies receive lower (but still high) exposure lines than the country’s government, while major AAA-rated supranational issuers generally have generous exposure lines due to the high ratings. Most central banks only invest in AAA-rated supranational and agency issuers and would assign a maximum exposure limit to this group of issuers.

Framework for assigning lines to sovereign issuers and government backed agencies. Categories are examples.

Category	Maximum Exposure (US\$ equivalent)
Government bonds issued by the United States, United Kingdom, Japan provided they are AAA and AAA-rated European bond issuers	X million
Government agencies explicitly backed by the governments of the United States, United Kingdom, Japan and AAA-rated European bond issuers	X million
Government bonds with AA+/Aa1 rating	X million
Government bonds with AA/Aa2 rating	X million

Framework for assigning lines to central banks and the BIS

Category	Maximum Exposure (US\$ equivalent)
Central banks in AAA-rated countries, including the BIS	Unlimited
Other central banks	X million (per central bank)

It was recommended that the RBM introduce a framework for setting exposure limits to sovereign, supranational and external financial institutions based on credit ratings based on the framework above.

Counterparty risk

Counterparties' eligibility should also be subject to objective selection parameters, such as primary dealer status, credit ratings and the ability to be a professional counterpart. The RBM's investment counterparties should be reputable and have an investment grade rating (commercial/savings banks and investment banks). All transaction in bonds should be executed on a Delivery-versus-Payment basis.

When the TRD requires a new counterparty, it should fill in a form with all relevant information regarding the institution. Examples of such information would be Instrument to be traded, Legal name, Full address, Offices (per instrument type), Contact name, Contact phone, Contact e-mail, S&P rating, Moody's rating.

The middle office should assess and approve or reject the new counterparty based on predetermined criteria. If credit rating requirements are met and the overall credit assessment is positive, the new counterparty should be included in the approved list.

It was recommended that the RBM establishes procedures for approving counterparties for various trade types. The middle office should maintain an updated approved list that outlines type of transaction, rating etc. for all counterparties.

V. Reporting

Given the large degree of delegation in foreign exchange reserves management, it is crucial to establish a formal reporting and monitoring system to ensure that limits are adhered to, and that senior management can observe the consequences of the investment decisions their portfolio managers have made.

An internal reporting system should be regular, frequent, and timely. Reports should be regular so that it is impossible to cover up awkward or unpleasant news. They should be frequent so that management can maintain close control and ensure that a situation does not get out of hand. And they should be timely (i.e. reporting should be as soon as possible after the period being covered) to ensure that if there are problems senior management can act before serious damage is done.

Reporting to the Board of Directors:

A predetermined Reserve Management Report should be presented regularly to the Board of Directors, e.g. quarterly. Such a report usually describes compliance with the investment guidelines portfolio, benchmark returns and aggregated financial risks. It would also include external manager arrangement and performance and may detail other issues that need the Board's consideration.

The Chief Internal Auditor should report to the Board of Directors on the effectiveness of internal monitoring, risk management and governance of the integrated process of reserves management.

The Board of Directors may also be advised by the RBM's General Counsel on the legality of all decisions made by the Board, and actions and contracts carried out to invest, manage or dispose of foreign exchange reserves.

Reports to the Investment Committee

At each (monthly) meeting of the IC, a background paper should be prepared to inform the IC about the economic and market developments over the reporting period and to provide a description of the various positions taken during the month in response to market movements, aggregate levels of financial risks, actual deviations from the benchmarks during the months and performance during the recent period. Reporting may also include detailed information on the use of credit lines, currency composition, modified duration and projected liquidity.

An incident report provides a risk-based assessment of incidents during the review period. This may include violations (and correcting actions) of investment guidelines, identified operational risk or issues related to system break-down or automation.

Other management reporting

The middle office should provide a daily compliance and risk control report to the front office and management detailing violations of investment guidelines (and actions taken to address these), including violations of exposure and instrument limits. This report should also summarize relevant information, such as modified duration, maturity structure and currency composition of assets, credit exposure by rating, instrument and geographical location and other information needed to manage reserves. This report should include activities of external managers as well.

A (quarterly) counterparty turnover report summarizing activity with counterparties and evidence of best execution should be prepared to ensure that counterparty risk is diversified.

A monthly back office report summarizing how transactions were settled during the months should be prepared. This should summarize incidents and specify accepted claims and outstanding claims with counterparties.

Chapter XI

Databases – Issues and Solutions

Farooq Akram⁶² and Jostein Eide^{63 64}

I. Background

Economic analyses at central banks require not only reliable economic statistics, but also easy and timely access to such statistics to conduct analyses within rather limited time frames. A well organized and well managed database system is therefore a crucial part of the research and analysis infrastructure at central banks. Ensuring and improving analysts' access to all available statistics also constitute an integral part of managing available databases.

The technical cooperation projects with the Reserve Bank of Malawi (RBM) on macroeconomic, monetary and financial analyses revealed the possibility of improving the coverage and quality of economic statistics, as well as making statistics more easily and available on a more timely basis to analysts at the RBM as well as to other potential users outside the RBM. In particular, improved accessibility of data for Malawi would encourage and facilitate more analysis and empirical research on the Malawian economy not only by the staff of the RBM, but also by external researchers in Malawi and abroad.

Moreover, given that compilation and publication of financial statistics are among the main tasks of the Research and Statistics Department (RSD) of the RBM, improved organization of data and its management are also important for increasing the efficiency of the RSD and making more room for other tasks. The RSD publishes financial statistics regularly: monthly, quarterly and annually. The RSD is also responsible for describing and analyzing economic developments and undertaking economic research. In addition, it produces policy papers and provides secretarial services to the Monetary Policy Implementation Committee (MPIC) and the Monetary Policy Committee (MPC). The RSD also coordinates contact with the IMF, including mission visits and submission of required data.

Hence, in light of the RSD's unsatisfactory database system situation, the RBM suggested a project on assessing its existing system and providing advice and technical assistance on an alternative way to store and manage its databases. Such a project was also consonant with the discussions and recommendations in the project reports on Financial Stability (Chapter VII) and Macroeconomic Analysis and Models (Chapter XII).

⁶² Farooq Akram was MCM/IMF short-term expert, and is Director, Research Department, Norges Bank Financial Stability.

⁶³ Jostein Eide was MCM/IMF short-term expert, and is Advisor, Economics Department, Norges Bank Monetary Policy.

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Initially, the main focus of the technical cooperation project on databases was to provide advice on database systems in light of the data situation at the RBM in general and the RSD in particular, and on the data requirements for the macroeconomic and financial stability analysis projects. However, in addition to addressing technical and organizational issues related to interconnections between different databases and their management, alternative database technologies were evaluated. Moreover, a new database system was established in line with the recommendations.

The database project did not address issues related to methodology and compilation of statistics, which have been a main objective of the statistical missions of the IMF's Statistics Department (STA). The STA/IMF has conducted various statistical missions to ensure that the monetary data submitted by the RBM to the IMF are fully in accordance with the methodology in the IMF's Monetary and Financial Statistics Manual. One of the goals of the STA missions has been to develop an integrated monetary database that will meet the needs of the RBM, STA, and the African Department of the IMF (AFR). At end-2009, this database had not yet become operational.

As outlined in this chapter, it was recommended that a time series rather than a relational database system should be used by the RSD. A few time database systems were considered, and it was concluded that a database system in EViews should be designed and implemented for organizing data compiled and used by the RSD. During the technical cooperation project, a database system in EViews was completed. One reason for storing data in EViews is that it is also used by the RSD for developing and using empirical models for analyses and forecasting.

The project on databases was mainly conducted in close cooperation with the RSD and the Information and Communication Technology Department (ICTD). The Bank Supervision Department (BSD) and the Supervision of Non-Bank Financial Institutions Department (NBFI) were also engaged in the project.

II. The project on database systems

1. Background

Data is commonly stored in Excel sheets at the RBM. This is mainly the case in the RSD as well as in other departments. Previously, a data base for storing time series was established in MS ACCESS format. It was, however, not used actively for storing and retrieving data for analyses as most users preferred to use Excel sheets. However, some of the RBM's databases are also programmed in Oracle, a system where the ICTD has acquired expertise. For instance, the database systems for payroll, exchange control, treasury bills, foreign exchange rates and holdings of currency stock are programmed in Oracle.

In light of the unsatisfactory database situation, as pointed out in project reports on Macroeconomic Analysis and Financial Stability, the RBM instituted an internal, joint RSD-ICTD project on Research and Statistics Database Development in 2008. According to the

Project Definition Report from April 2009, the RSD's prospective Research and Statistical Database System should mainly be for internal use, and should be set up using an Oracle database platform. Despite fetching data from other departments and external organizations, the database system would largely remain under the sole jurisdiction of the RSD. The main purpose of the compilation of the data would be for economic research and analysis, provision of policy advice to the Senior Management and the policy bodies, and for information dissemination to the public.

In the July 2009 report of the technical cooperation project on databases, it was recommended that the RBM reconsidered, and at least redefined the purpose, scope of work and priority issues for the RSD-ICTD project on a Research and Statistics Database System based on an Oracle platform. As outlined in Section III below, in view of the RSD's data situation and requirements it was recommended that the RSD's central database system be built using a Time Series database system with an EViews database solution, which has a number of features appropriate for a medium sized database system. If the established EViews solution proved to meet the needs of users inside or outside the RBM, the project started with the ICTD would no longer be needed.

2. The current database situation in the RSD

To assess different technical solutions for storing and managing data, it is useful to bear in mind the type and amount of data the RSD deals with and the expertise of its staff.

The amount of data that the RSD would like to include in its central database is not very large. The variable list for this database project contained only about 200 time series, covering monetary statistics, financial soundness indicators, interest rates, public finance, national accounts, external sector, and IMF data for world and sub-Saharan GDP and CPI and the oil price. Although some of them have underlying sub-items, the total number of time series in the central RBM database is likely to amount to less than 500, or a couple of thousand at the most. Thus, only a small to medium sized database appears to be needed, and navigating through such a limited number of time series does not require a sophisticated search facility.

In the RBM, the Excel spreadsheets are used extensively both to compile statistics and to perform basic computing for analysis. The RBM staff has a good level of knowledge on basic as well as more advanced use of Excel. It was therefore recognized that a new database system should make good use of the available Excel expertise. It should be a supplement to computing in Excel, not a replacement for Excel. The considerable amount of manual data management performed in Excel today should be replaced by a central data repository that works well with Excel. The new database system should not necessarily replace Excel as a platform for preparing statistics and input data to the central database, nor as a tool for handling output for simple analysis, reporting or presentations.

In June 2002, the Eastern and Southern African (ESAF) IT Forum, in collaboration with T-Systems of South Africa, commenced a project aimed at developing and implementing an information and communication technology solution for all automatable processes of banking

supervision activities in the SADC region. While this will improve the work processes and data handling of the BSD and the NBF, the project was not yet concluded at the end of 2009.

In the technical cooperation project, the RSD was advised to make arrangements with the National Statistics Office (NSO) to receive the national accounts and other data compiled by the NSO electronically. Furthermore, the RSD has requested the NSO to make their data available as soon as it is ready for release and not await its formal publication. To ensure that the databases are updated promptly after the statistics have been compiled, a statistical calendar has been made listing dates for the publication of statistics from the RBM and other institutions.

III. Alternative database technologies

1. Main features of time series and relational database technologies

In the technical cooperation projects on Macroeconomic Analysis and Financial Stability, the data to be used for analysis is primarily time series data. There are several database systems specifically designed to handle time series. These systems have special functions and features for dealing with observations interlinked over time. Such database technologies are referred to as time intelligent. This inherent understanding of time and calendar can provide a great advantage over relational database technologies where the observations in time series are not treated differently from any other relation in a database model. Yet, a relational database system may have other advantages over a time series system. Before introducing a more efficient database system to the RBM, the strengths and weaknesses of alternative database technologies were considered.

Strengths of time series databases

Examples of time series database systems are FAME, Whayu, AREMOS, EViews and the IMF developed time series solution in Excel, called DMX (Data Management in Excel). FAME is used for data management in a number of central banks, including the Federal Reserve, the Bank of England, the European Central Bank and NB, as well as in the OECD and the IMF. Central statistical offices, financial institutions and the energy sector also use Sungard's FAME database solution. Whayu, a newcomer to the time series database arena, is built specifically to handle and store high frequency data (e.g. intraday market data). AREMOS is provided by Global Insight and used primarily in connection with data from Thomson Datastream. In the later versions of the popular time series analysis tool EViews, a proprietary database format has been introduced. This is a relatively new database tool, and it is not yet widely used as a platform for data management. Nonetheless, it has started to gain popularity in research departments for handling and storing model output. With regard to the DMX, all time series data and metadata are stored to the database from within Excel, and time series can be searched and retrieved without leaving Excel. On retrieval, simple time series transformations can be made.

The strength of the time series technology is that it provides better solutions for handling time series. Less storage capacity is required as time series are stored more efficiently when treated

as genuine time series objects. Moreover, the time intelligence and time series object structure provide higher computational speed when reading, writing and transforming time series data. Time series databases usually provide a comprehensive set of built-in time series functions, so that any data transformation can be carried out with ease regardless of frequency and date range. The integrated charting and reporting tools are designed to produce all standard time series graphics, and to do this with simple, readable, program statements. As time series database technology has been developed in conjunction with econometric time series analysis, they normally provide solutions well integrated with other analytical tools. The newer EViews platform is particularly flexible and may read and write data in all formats used in the major statistical and econometric programs.

Strengths of relational databases

Relational databases represent a more widely used database technology than time series databases. Oracle, MS SQL, MS Access, and Sybase are household names in database and data warehouse systems for all types of businesses. Relational databases are better at handling cross-sectional data and metadata (meaning "data on data", e.g. description, source, sector, unit information, etc). These databases are better suited for handling complex data models with any number of dimensions and related tables. Reporting tools are designed to extract data across tables, and advanced queries combining numerous search criteria can be expressed with ease. Most relational database systems can be set up to work closely with Microsoft Excel.

Other database issues to be considered

Some general database system issues should also be considered before selecting a database platform for the RSD. These issues relate to infrastructure requirements such as server and network set up. Database administration features such as access control, backup, database maintenance tools, and security and encryption facilities should be considered. License cost is another issue of importance. One would also want to look ahead and take into account future prospects of the database system. Scalability could become important. Availability of programming skills could change. The market position of the system should be considered.

When building a central database system particular attention should be paid to access control features. A well functioning system for the administration of authorization privileges should be implemented. Basic features of controlling read and write access to the database are essential. A more finely tuned system could make it possible to control access on a series level or on an observation level, so that new data could be entered into the database but unauthorized users could not see the figures before the release date. Logging and documentation of changes to the database are useful functions to protect data integrity.

2. Assessment of time series databases versus relational databases

Time series analysis is the main focus in the RSD. Therefore, it would be a major advantage to have all the time series functions, data handling features, analytical, graphical and time series reporting tools fully integrated with the database system. Macroeconomic data are simple by

nature. The number of attributes and metadata dimensions are usually limited, and may be handled with sufficient flexibility within a time series database system. The limited number of series in the planned database adds to the argument that the advanced search capabilities of a relational database system are not needed.

By choosing a Time Series database system, the data management can be placed closer to economic analysis, which may be a major advantage with regard to data quality. Validation of economic time series data requires an economic understanding. Furthermore, powerful validation techniques may be designed using time series analysis tools that are not feasible using relational databases. Both FAME and EViews provide a high level programming language designed to handle time series and perform econometric analysis on macroeconomic, monetary and financial stability issues

A time series database system is set up as a simple file structure. No special configurations are required of servers, network or PCs. The only requirement is access to a shared folder containing the database files. A Time Series database system, with its compact storage and high computational speed of time series, puts less strain on ICT infrastructure than a relational database system. In view of the RSD's data situation and requirements, it was concluded that the RSD's central database system should be built using a Time Series database system.

3. Assessments of time series systems

EViews versus FAME

EViews has both a graphical user interface and a command line interface, whereas FAME has only a command line interface. The programming capabilities in EViews are advanced, and include batch-mode for automatic, scheduled execution of procedures. Programs for importing time series data, manipulation of observations and metadata and exporting procedures may be set up with ease and a large extent of flexibility. Thorough econometric analytical validation checks may be performed on new or revised data. Tables and charts may be auto-generated with highly flexible formatting features. All these data management tasks may be effectively run using quite limited resources once the system is set up for the various statistical areas. Still, if new data are to be entered into the database or analyzed, such tasks may also be performed manually in the graphical user interface of EViews.

The RSD is already using EViews as the main tool to perform econometric analysis and model development. To achieve the RSD's ambitions of conducting more advanced analytical work, learning and exploiting the data management capabilities in EViews would be conducive to building effective systems for analysis. It would be advantageous to build and combine the knowledge needed for econometric research with the competence of data management. Having the central database available directly within the main analytical tool would be a significant benefit. The interface used to search, extract and update data from an EViews database would also be used to develop and subsequently run the models.

EViews provides all standard input and output formats, and provides a more seamless integration with other databases than FAME, where more tailoring is needed when transferring data to and from other formats. Graphical output is possible in all major graphic formats. Table output is available in flat file format, html and rtf for quick integration with Microsoft Word. Combined graphical and tabular output cannot, however, be produced. Files will have to be combined after they are produced.

Commercial time series data from all major vendors can be seamlessly integrated with EViews. This is also an advantage over FAME. FAME license costs are very high compared to EViews. The market position of EViews should not cause any concern over future support. It is clearly one of the most versatile and holistic package with focus on time series analysis, and it is increasingly popular among academics.

However, an EViews solution is not well suited for handling complex cross sectional data like supervision data. The recommended solution would therefore not include a new database solution for all satellite input databases in the RBM. If the various departments/sections responsible for the satellite input databases are content with working in the Excel format, there is no need to change. Actually, the proposed EViews solution may not be a good alternative if one considers moving away from Excel in the more complex satellite data areas (e.g. supervision). Then, one might rather look at a relational database solution; e.g. Oracle.

As EViews does not include a sophisticated access control system, it has limited out-of-the-box instruments to trace changes made to the databases. If there is a need to identify the responsible officer who last made changes to a series, this feature will have to be built into the program design. Furthermore, direct database access is only possible through EViews. Anyone without an EViews license will have to access data through another format. As the main work on macroeconomic analysis and financial stability is performed by economists in the RSD, a database solution providing direct access within the main econometric analysis tool used in the RSD will be a clear advantage. Other data users, in or outside the RBM, will have to settle for indirect access solutions. One way of providing access to non-EViews users would be to produce a complete dataset in Excel that is auto-generated any time there is an update in the EViews database. Procedures for auto-generating html and graphical files for web-publishing may easily be designed and scheduled appropriately. The shortcomings related to direct database access could also be leveraged by increasing the number of EViews licenses.

Compared to FAME, an EViews solution is simpler. FAME contains more advanced programming capabilities, and the time series programming is available in several languages (4GL, C, Java, .net). Thus, the time intelligence of FAME may for instance be fully integrated in business APIs. The simplicity limitation of EViews is at the same time a clear benefit, as the entry level for designing and operating a well functioning data management system is much lower than with FAME. In conclusion, the EViews database has a number of features more appropriate than FAME for a prospective medium sized RBM database system.

EViews versus DMX

By using the IMF's DMX system, the economists work solely in Excel. All time series data and metadata are stored to the database from within Excel, and time series can be searched and retrieved without leaving Excel. On retrieval, simple time series transformations can be made.

The DMX database solution has some advantages over the EViews solution, while in some cases the opposite is true. The following table indicates the main strengths and weaknesses of the two systems.

	EViews	DMX
Main strengths	<ul style="list-style-type: none"> • Complete analytical capacities • Graphical User Interface, command line, and scripts • Integrates well with Excel (AddIn for import from EViews7) • Output to any standard graphic format and table format 	<ul style="list-style-type: none"> • No license costs – freeware from IMF • Excel-based – data stored and retrieved via Excel • Direct access for all RBM economists • Low learning threshold • Auditing
Main weaknesses	<ul style="list-style-type: none"> • License costs • No direct access for non-EViews users • Learning threshold (quite advanced) • No inherent auditing function 	<ul style="list-style-type: none"> • Analytics limited to Excel (yet provide frequency conversions) • Output formats limited to Excel • Limited automation

The database project in the RSD stems from the projects aimed at enhancing the analytical capabilities of staff who perform macroeconomic and financial stability analysis. With regard to the analytical ambitions of the RSD, using the EViews database solution gives the benefit of an integrated analytics and database handling system. When developing and operating models in EViews, it is useful with direct access to data in the Research and Statistics Database (RSDB). Scripting model systems and scripting data handling systems are very similar exercises, so increasing the knowledge of one line of work will be beneficial to the other.

Compared to the DMX solution, the EViews system may have two particular flaws. The importance of these two shortcomings would have to be evaluated when the RSD has gained more experience with the system. The two shortcomings are:

- The lack of sophisticated auditing in the database system. Only the appointed RSD Data managers have write privileges to the database files. All validation output is documented in archived files. This makes it fairly easy to control and check who has been in the database and what has been done at any time. Yet, it cannot compare to more sophisticated database auditing systems.
- No direct access for non-EViews users. If data from RSDB is published regularly on internal and external websites, with a short time delay, most users will probably be quite satisfied with accessing data in this manner. Converting from HTML to Excel, for instance, is a matter of two mouse clicks.

In addition, the EViews to Excel export (Monthly/Quarterly/Annual) is made whenever the database is updated, and this procedure should cater to the needs of those who work with model systems that use analytical tools other than EViews.

As the EViews database solution is designed to solve the data problems described in the various technical cooperation projects, the use of DMX did not seem beneficial at the moment. However, the DMX solution has some interesting features, and should be included in future database assessment. It was therefore recommended that the RSD halt the general database project with the ICTD, and put resources into making the EViews database work as designed. The department should evaluate the EViews database system over some time, with particular attention to the two main shortcomings of the solution, namely database auditing and direct database access for non-EViews users. If the RSD finds that these shortcomings prove to be a serious problem, the project on making a general database should be taken up again. If so, the DMX time series solution should be considered before a relational database setup like Oracle. In that case, it was recommended that the RSD and ICTD considered the DMX solution from IMF. Indeed, the DMX solution combined with an EViews database could very well be an advantageous solution.

IV. Features of the RSD EViews database

1. Contents of the Research and Statistics database (RSDB)

During the technical cooperation project, a database system in EViews was completed. The database, called the Research and Statistics Database (RSDB), has been set up with data from the statistical areas defined to be of particular interest for research and analysis at the RSD. The database contains nearly 200 time series. The following table displays the statistics covered by the database as of end-2009.

Satellite Database	Statistics
Banking Services Database (Research & Statistics).xls	Monetary survey Monetary authorities
FSI Database.xls	Financial Soundness Indicators
Interest_Rates.xls	Monthly average interest rates
Public Finance.xls	Public finance
National Accounts.xls	GDP Investments Consumption Saving Industrial production CPI

External Sector.xls	Imports Exports Commodity export prices BOP Exchange rates Nominal and real exchange rates
IMFdata.xls	World GDP, CPI Sub-Saharan Africa GDP, CPI Oil price

2. Metadata and name structure

In an EViews database, further efforts may be put into the design of names for series. A well structured naming convention helps users search the database, and makes it easier to design model scripts as well as table and chart output. The mnemonics and code structure used for the RSDB follows the principle of the DMX template envisaged by the IMF, with a few modifications and extensions. The modifications reflect the need for using a frequency code in model design. Some extensions regarding specific transformations (seasonal and trend components) were made to the names, and some statistical data entered in the database did not have template codes. The IMF country code for Malawi was not included in the mnemonics.

As the nomenclature of the RSDB is based on the DMX code lists, a move towards the DMX solution would not necessarily involve a lot of effort concerning the preparation of metadata and name structures. Nor would any major changes in the codes in the operating econometric models be necessary.

The EViews time series naming convention has a 24 character limit. To separate dimensions in series name, the Underscore character (“_”) is used. All series contain a frequency code, a subject code (DMX code), and one or two extensions describing transformation or regional/country code:

FREQUENCY_DMXSUBJECT EXTENSION (_EXTENSION)

In addition to the information in the names of series, the EViews metadata fields provide users with information as can be seen in the following example:

Name: a_ngdp_r
Type: series

Last_Update: 11/24/09 10:36
Last_Write: 11/24/09 10:36

Freq: A
Start: 1993
End: 2007
Convert_HiLo: sum
Convert_LoHi: const_s

Description: Real GDP in MK billion (base year 1994)
Source: NSO
Units: Billion MK
Remarks: Annual national accounts GDP
History: Imported from 'Z:\RBMdata\Inputdata\National accounts.xls'

A metadata documentation procedure has been designed for the RSDB system. This may be run at anytime or regularly after updates, and prints the metadata information for each time series in the RSDB to a txt file. The detailed name structure of the series and code lists, following the principles of the DMX template envisaged by the IMF with a few modifications and extensions, were drawn up in cooperation with the RSD.

3. System overview

The system was implemented on the mapped share Z drive and can be operated by EViews users with write privileges on the assigned sub folders. The architecture of the system consists of:

- Input data files (the Excel Satellite Databases)
- EViews database files (edb files), with archives
- EViews program files (prg files)
- Validation tables, with archives
- EViews registry, for administering database file locations

The EViews program files perform three tasks: importing new series, validating updated series and storing validated series in the database.

Import and define metadata for new series

To add new data to the database one must read data from the specific Satellite database and add metadata to the series in EViews. Metadata are important in enabling users to search and retrieve the relevant time series and to have confidence in the content of the data. The import programs read data from the specified input Excel file, including series names and descriptions. Based on statistical area and name structure, each series is assigned specific metadata concerning category, default frequency conversion method, display name for charts and tables, unit and source information. The imported series with data and metadata are then entered into the RSDB.

Validation routines for updating series

The validation programs import data from the specified input Satellite database into an EViews work file. Then, any corresponding time series previously stored are fetched from the RSDB with an added name suffix `_OLD`. The newly imported and `_OLD` series are compared in a validation table. The validation table displays the number of observations and compares the latest observations for each time series. The table is stored as an HTML file, archived with the date of production for the purpose of documenting updates. More refined validation techniques may be implemented over time, and could be tailored to fit the different properties of varying statistical areas.

Store validated data series and archive database

If the validation criteria are met and accepted by the operating officer, the store to database program should be executed. In this program, the validated data is merged with the database content. This means that newly validated series are not written over existing data, they are merged so that any observations in new series take precedence over observations in the `_OLD` series. If the new series are lacking observations historically, the observations in the existing `_OLD` series will be used.

At the start of the program, before new data is merged with old data, a copy of the database is made and saved to the archive folder. The copy of the database gets a filename containing the date of copy. These archived databases can be accessed from EViews and are useful as a source for future real time data analysis. Moreover, they document the updating history of the database so that it is possible to track changes made to the data.

Database registry

The EViews database solution has a registry function which is convenient for administering database access for a user group. The setup of the RSDB system is designed so that all EViews clients use the registry in the shared folder. The RSD Data managers can administer this registry, and add or move common databases without any need for the users to change their setup.

Database maintenance

The setup of the RSDB EViews solution is simple and does not require a lot of database maintenance. EViews contains a few database maintenance tools with which the data managers should be familiar. Firstly, when an EViews database is updated it will increase more in size than is actually needed for each update. After a while it may therefore be practical to use the database packing tool in EViews. As the RSDB file is very moderate in size, the database does not have to be packed very often – once a month could be appropriate.

Secondly, there are a few database integrity test and repair tools available in EViews. The full documentation of these tools can be found in the online Help directory in EViews. Normally, file errors are rare with EViews databases, and the ICTD has also included the common

databases in their nightly backup routines. Still, the data managers should be familiar with the repair tools, and able to use them if necessary.

4. Publishing data

For non-EViews users and users outside the RSD, the database setup was designed to provide access to data from the RSDB in two ways. For users who would like to import data into analytical tools other than EViews, a procedure to dump the whole database into Excel format is implemented. For other users inside and outside the RBM, access to data will be provided through web files generated from the EViews database.

Publishing data to web

The RSD will use the RSDB for publishing data. EViews programs can produce HTML files with tables or charts that can be formatted to meet the needs of the RBM web design. This enables the RSDB system to produce tables with quality controlled data from the database, complete with design ready for publishing. The HTML files coming from the EViews system can be sent straight to the web server. This will make a highly effective and streamlined system for publishing data, and it is identical to the system used by Norges Bank.

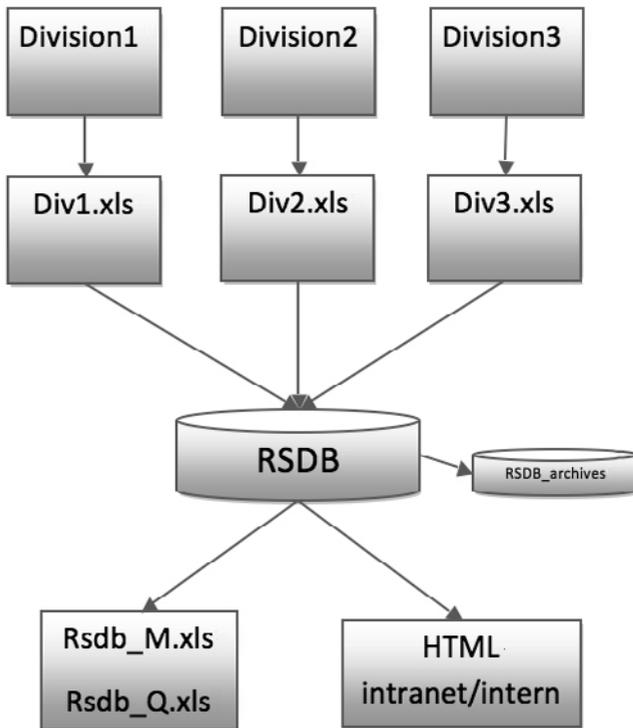
Templates for web tables were made during the technical cooperation project. The templates are made from EViews scripts generating formatted EViews tables saved to HTML format. These templates can be used for developing web pages which meet the design requirements of the ITCD and content requirements of the RSD.

With regard to the dissemination of aggregate time series data on the web, many central banks and national statistical offices are finding the Statistical Data and Metadata eXchange (SDMX) standards particularly useful in this respect. The public web site, www.sdmx.org, provides some useful free tools and sample implementations.

Excel copy of database

For users who would like to have access to the complete dataset in Excel, a procedure to dump the whole database into Excel format has been designed. This could be useful for users who would like to use other analytical tools that do not communicate directly with EViews (like PC Give or MatLab). The export to Excel is divided into three files, so that data containing monthly, quarterly and annual data are put into separate spreadsheets.

Chart: Stylized System Overview



Data from each division in the RSD are entered into structured Excel satellite databases. The import and update procedures in EViews read the Excel files and store the data to the RSDB, and copies of the database are saved to the archives folder.

For RSD analysis, the RSDB is accessed directly in EViews. For non-EViews users the auto-updated Excel files containing Monthly, Quarterly and Annual data are available. For users outside RSD, tailored HTML files will be made available on the intranet or on the RBM external website, based on templates made during the technical cooperation project.

V. Other database system issues

1. Model output databases

In the technical cooperation project on Macroeconomic Analysis, a database system for storing model output was envisaged. The RSDB database system can easily be expanded to work as a repository for model output as well as statistical data. The issue of naming conventions should be addressed, especially if generations of data and model output are to be saved for future

documentation. One should consider whether all model output should be stored in one database, or whether it is more convenient to store different models in different databases.

2. Statistical release calendar and update notification for the RSDB

When the analysts in the RSD as well as data users outside the department commence using the RSDB, a change in communication related to data management may be needed. When the central database system is in place, users should be confident that the database contains the latest, complete version of any statistics. Still, one should have a statistical release calendar available. This calendar should contain information on all relevant economic statistical releases in the upcoming months, the date and time of publication, and the database updating time schedule. Such a calendar is useful for economists who plan to perform model work when new data are available, and it will also be useful for planning the data management responsibilities. In particular, it may be useful for announcing delays or possible errors in the database updating procedures. A digital copy on the RBM intranet website would be a convenient way to publish and update the statistical release calendar.

Whenever an update to the RSDB is made, a user notification system would be useful. In Norges Bank, a standard e-mail is sent to the core group of database users every time a database is updated. Such a simple notification procedure could be implemented for the RSDB.

VI. Organizational issues

The RSDB is a common good for the RSD. To ensure a high quality database system that supports high quality analysis, it is important that the responsibilities of all involved parties are clear, and that sufficient resources are allocated to carry out the necessary tasks. The following addresses some of these issues.

RSD divisions' responsibility

- Provide input data and update the structured Satellite databases in due time.
- Make sure data from other sources are available electronically, to avoid manual typing and the risk of human error. In particular, there is a problem in the National Accounts Division, which receives the monthly CPI data by fax only. This issue has been addressed in previous Aide-Memoires, but is still to be resolved.
- Support the data managers in maintaining quality metadata.

RSD data managers' responsibility

- Administer the database registry for efficient access from each user's computer.
- Prepare import data procedures when new series are added to the database.
- Validate updates, and notify users when the database is updated.
- Update tables and charts for web publishing.
- Ensure quality maintenance of code lists and metadata definitions.
- Update the statistical release calendar.

In general, the tasks of the database managers for the RSDB are not expected to be very time consuming. A database of this size normally requires updates once a week on average. If the satellite database is updated properly, running the validation routine and sending an e-mail notification to users should not take more than 10 minutes. Working on new data or changing metadata is more like project work, and could demand more concentrated effort at times.

RSDB system responsibility for the ICTD

The setup of the RSDB EViews solution is simple and does not require a lot of database maintenance. Data organization, both data model and input data design, is the responsibility of the Data Managers and the economists at the RSD. Regarding infrastructure, access control and database maintenance, there are a few issues that should be the responsibility of the ICTD.

Backup system

All vital files on the Z-drive should be included in the common backup routines every night.

User setup

The ICTD should be responsible for installing EViews on the economists' computers. When an installation is done, a few changes should be made to the default setup to make the system as effective as possible. The EViews database registry should be mapped to the shared system folder, to ease the administration of the common databases. Moreover, all clients' computers should be configured with English (UK) regional setting, not English (US). If input satellite databases contain a mix of US and UK date formats, EViews has a problem interpreting the date column in Excel.

Access control

Access control to the EViews solution is based on regular access control in the Windows system (Active directory). The ICTD must provide READ and WRITE privileges to the database, program and input data files according to the RSD's instructions. The Data Managers, as defined by the RSD, need write privileges and all other EViews license holders need read access to the system folders.

Chapter XII

Macroeconomic Analysis and Models

Farooq Akram⁶⁵ and Anne Berit Christiansen^{66 67}

I. Background

The main goal of macroeconomic analysis in a central bank is to provide a sound basis for its policy decisions. Central banks also fulfill an important role in informing the public of recent and possible future macroeconomic developments. This role of a central bank is particularly important in Malawi as there are few other institutions beside the Reserve Bank of Malawi (RBM) that regularly provide information on economic developments.

The main aim of the projects on Macroeconomic Analysis and Models has been to assist the Research and Statistics Department (RSD) in strengthening its capabilities to conduct macroeconomic analyses and their integration in relevant policy documents. The RSD performs a relatively large number of duties with limited resources. It compiles and publishes financial statistics, describes and analyzes economic developments and undertakes economic research. The regular publications from the RSD include monthly, quarterly and annual reviews on economic and financial developments. In addition, it produces policy papers, provides secretarial services to the Monetary Policy Implementation Committee (MPIC) and the Monetary Policy Committee (MPC) and makes contributions to speeches by senior management. The RSD also coordinates contact with the IMF, including preparation of mission visits and submission of required data.

The project focused on the infrastructure for data coverage and management, development of empirical models and integration of macroeconomic analysis in key policy documents and organization of the RSD, bearing in mind the human and technical resources available to the RSD.

An efficient infrastructure for data access and management was considered necessary for undertaking analyses efficiently and sharing data input as well as model output within the RBM and with the public. In view of the importance of such a system for macroeconomic analyses and policy reports, the technical cooperation project on Macroeconomic Analysis and Models was conducted jointly with the project on Databases, which is presented in Chapter XI.

⁶⁵ Farooq Akram was MCM/IMF short-term expert, and is Director, Research Department, Norges Bank Financial Stability.

⁶⁶ Anne Berit Christiansen was MCM/IMF short-term expert, and is Director, Monetary Policy Department, Norges Bank Monetary Policy.

⁶⁷ We wish to thank Jan Vlcek, MCM/IMF, Etham Weisman, STA/IMF, Neil Nyirongo, Executive Director of Economic Services, and Director Efford Goneka and staff of RSD for helpful comments.

This chapter will focus mainly on models available to the RSD and some suggestions for expanding its suite of models, communication of policy decisions and how key policy documents can be made more analytical. In this chapter we briefly describe data coverage and quality, while referring to Chapter XI for more information regarding data management.

Some changes have been suggested and implemented in the organization of the RSD and its resources during the projects. The organizational issues are not elaborated on in this chapter. Given the relatively small size of the RSD in relation to its tasks, it was emphasized that rigid divisional boundaries are not fruitful; albeit responsibilities for the different tasks should be clear. The three RSD divisions were encouraged to work together to establish and maintain an efficient infrastructure for data management and conduct of economic and policy analyses.

II. Models for forecasting and policy analyses

An effective monetary policy requires an understanding of the ways in which monetary policy affects key macroeconomic variables. As in many other economies, considerable uncertainty surrounds the monetary policy transmission mechanism in Malawi and poses a challenge to the conduct of monetary policy. There is relatively scarce empirical evidence on the functioning of the Malawian economy, and the RBM has few economic models that can aid macroeconomic analyses, forecasts and monetary policy formulation.

1. Monetary policy and the transmission mechanism

Monetary policy normally works through the interest rate channel, the exchange rate channel and the expectations channel. In the case of Malawi, the interest rate channel may not be strong since a substantial number of households and primary commodity producers may lack access to capital markets and thus are not affected directly by movements in interest rates. In the short run, such households may not be affected much by exchange rate fluctuations either if they rely on e.g. subsistence farming. The expectations channel for monetary policy may not be strong either. This would, *inter alia*, require a much more active management of expectations by the RBM, including publication of information about the current and expected monetary policy stance, short- and medium-term policy targets and future economic prospects.

Studies conducted by the staff of the RSD have provided mixed evidence on the interest rate and the exchange rate channels. Jos-Milner (2004) analyzed the monetary policy transmission mechanism using a VAR model.⁶⁸ The analysis suggested a weak monetary policy transmission mechanism. It was found that the most important channel of transmission was the exchange rate, while the interest rate channel was not important. However, the latter finding can be questioned in light of Lungu (2007)⁶⁹. This paper investigated the bank lending channel in Malawi by using aggregate data from the banking sector. It estimated the response of bank

⁶⁸ Jos-Milner (2006): "Monetary Policy and Transmission Mechanism in Malawi", presented at a seminar of the Common Market of Eastern and Southern Africa (COMESA) in October 2006.

⁶⁹ Lungu, Mark F. Ndishe (2007), "Is there a Bank Lending Channel in the Malawian banking system", unpublished manuscript.

loans to a monetary policy shock while taking into account the response of the lending rate and the output level. The findings suggested that the interest rate channel is working alongside the bank lending channel.

In another research paper by the RSD staff, Kwalingana (2007) investigated the monetary policy reaction function for the RBM with the aim of reviewing the conduct of monetary policy during and after the financial sector liberalization.⁷⁰ This study found that inflation has been the most important variable in setting the monetary base. Effects of the output gap have largely been statistically insignificant and/or counterintuitive. This may, however, reflect the uncertainty of output gap estimates. Exchange rate developments were found to moderately influence the setting of the monetary instruments. However, the setting of the policy (discount) rate seemed to be more influenced by the RBM's desire to correct a previous disequilibrium in the money market than a direct response to economic developments.

Empirical analyses undertaken during this technical cooperation project, however, suggest that useful information may be gained about the monetary policy transmission mechanism by statistical and econometric analyses of the data, despite possibly large data measurement errors. In the following, we first review some previous model projects that the RBM has contributed to and models used by the RSD when the current project was commenced in 2008. Thereafter, we present and discuss some of our suggestions for further model development and use.

2. Previous model projects

Previously, as part of a UN project on developing macroeconomic models for African countries, the RSD developed a macroeconomic model for Malawi in 2002.⁷¹ The main objective of this project was to estimate the demand and supply sides (real sectors), the monetary sector and prices, the foreign sector as well as the fiscal sector for Malawi. The intended use of the model was to study effects on e.g. real consumption, real investment and real GDP of shocks to exogenous variables, i.e. interest rates, government consumption, commodity prices, oil prices and import prices. Simulations of the model did not lead to easily interpretable results, however, and there proved to be considerable requirements regarding data. Moreover, the specific software developed for the project did not work as intended. The model project was therefore abandoned.

The RSD staff has also participated in a project on developing a small macroeconomic model for the Malawian economy, a project agreed upon between the Malawian government and Statistics Norway.⁷² The RBM participated in its capacity as member of the National Committee on Balance of Payment and National Accounts. The model was based on annual data and mainly designed with a view to aiding fiscal policy. At the outset, the RSD envisaged that the model could also be useful in a monetary policy context. The model has, however, become rather large

⁷⁰ Kwalingana, S. (2007): "A monetary policy reaction function for Malawi", unpublished manuscript.

⁷¹ Msosa C., L. Mkandawire and G. Phiri (2002): "A macroeconomic model for Malawi" Unpublished paper, November 2002.

⁷² Cappelen, Å., R. Choudhury and T. Harding (2006): "A small macroeconomic model for Malawi". Document 3/2006. Statistics Norway.

with several hundred equations and the monetary side of the model remains to be developed. The RSD has therefore become uncertain of its value for forecasting and conducting regular monetary policy analysis, not least because of its use of data at annual frequency and its demand for extensive data.

3. Models used at the Research and Statistics Department

When the technical cooperation project on Macroeconomic Analysis and Models was initiated in the beginning of 2008, the RSD used two economic models to support work on macroeconomic analyses: a model for forecasting inflation and a financial programming model (FP model) for policy analyses. These models are still maintained by the RSD.

The inflation model is used by the RSD to forecast CPI inflation up to 12 months ahead. The forecast is actually made by taking a simple arithmetic average of inflation for one month in the current year and the same month in the past four years. Inflation forecasts are made for headline inflation, which includes food prices that are quite volatile due to seasonal and other factors that determine the size of the harvest. The inflation forecasts are for internal purposes only, and are not published.

Relying only on the past history of inflation, the model does not enable one to explain observed inflation and forecasts of the inflation rate. It may also be argued that it is unreasonable to assign an equal weight to inflation over a five-year period when forecasting future inflation.

The financial programming model is used to derive scenarios for key macroeconomic variables that are consistent with target paths for reserve money (RM), M2 and net foreign assets (NFA) and projected paths for inflation and real GDP growth. It is mainly used during preparations for discussions with the IMF on future scenarios of the Malawian economy and their implications for fiscal and monetary policies.

The FP model has been used by the RBM since 2000 and is a version of the well-known Polak model, which is often used in the context of IMF stabilization and structural adjustment programs; see e.g. Polak (1998).⁷³ The RBM's version of the model is based on the monetary survey identity; decomposition of net foreign assets and net domestic credit into private and public sector components. Other equations characterize demand for M2, reserve money, private sector credit and government revenues (exclusive grants) as linear functions of nominal GDP. The associated parameters, i.e. velocity of money, money multiplier, credit demand propensity and average tax rate, are derived as ratios between the corresponding endogenous variables and nominal GDP.

Using given target paths for NFA and projections for inflation and real GDP growth over (usually) a five-year period, the FP model solves for growth in M2, reserve money, private sector credit, net government credit, tax revenues and government expenditures. Net government credit is derived as a residual from the monetary survey identity, and hence depends on the

⁷³ Polak, J. (1998): The IMF monetary model at 40. *Economic Modelling*, vol. 15, 3, pp. 395—410.

projected path for M2, private sector credit and the target path for NFA. Policy implications in terms of required changes in growth in reserve money and government expenditures can be derived by comparison with actual figures of reserve money and government expenditures.

Models such as the FP are of limited use in the regular monetary policy formulation, but may be useful for consistency checks and undertaking scenario analyses. As Malawi has had various arrangements with the IMF (e.g. PRGF, ESF and ECF), the RSD wants to maintain and develop the FP model to facilitate policy discussions with the IMF, e.g. regarding the operational targets for monetary policy that are set out in the programs.

4. Model development – a way forward

The RSD has assigned high priority to developing models that can be useful for forecasting and policy analysis while embedding key features of the monetary policy transmission process in Malawi. The RBM's experiences with bigger, ambitious model projects have been mixed. Given the past experiences of the RSD with large model projects and its resource constraints, it was concluded that the RBM should aim at developing a suite of models containing different, relatively small models that serve different purposes.⁷⁴ The suite of models could be expanded gradually as one gained experience with smaller models over time. Such models should primarily aim at being useful for forecasting key macroeconomic variables, e.g. inflation and measures of economic activity, and/or be informative about the response of the Malawian economy to changes in monetary policy instruments.

One advantage of this empirical approach is that it would encourage development and maintenance of an efficient system for compilation and management of economic statistics. It would also provide incentives to extend the coverage and quality of economic statistics. Moreover, it would contribute to accumulation of empirical evidence on the functioning of the Malawian economy and its response to monetary policy and to other domestic and foreign shocks. This would prove useful in the long run if the RSD decides to develop and use theory-based models that are calibrated to the Malawian economy.

Given the resource constraints and the limited information available about the functioning of the Malawian economy and other comparable economies, building a DSGE model and/or an extended macro-econometric model was not considered advisable at this stage. Building, maintaining and using such models is quite demanding, requiring considerable experience in model use and information about the functioning and stance of the economy to obtain reliable forecasts and/or policy analysis. Development of such models should therefore not be given priority in the short and medium run.

⁷⁴ Many central banks pursue a "suite of models" strategy, using different types of models for different purposes; a theoretic time series/factor models for short-term forecasts and various econometric models and strict theory based calibrated models for forecasting and or monetary policy analyses.

4.1. Model development in the short and medium run

It is essential to accumulate more knowledge about the functioning of the Malawian economy and the transmission of monetary policy. One may therefore start by gathering some stylized facts against which to assess new empirical and theoretical models and aid policy discussions. Stylized facts may be established by surveying available empirical literature about Malawi and comparable economies. Experience from other central banks suggests that there is much to gain through regular contact and exchange of views with database managers, model builders and users at central banks.

We suggested that the RBM focuses on developing and using small empirical models in the short to medium term. Various time series and econometric models could be useful in the assessment of the current and near-term outlook for key macroeconomic variables. Single equation or multiple equation time series and macroeconometric models would also help in the accumulation of knowledge about the monetary policy transmission mechanism by identifying main shocks to the economy and their transmission channels. Furthermore, some of the models for key variables might be used together with the financial programming model, should the RSD decide to use this model more actively. At Norges Bank, a number of such models have proved very useful in supporting the day-to-day analyses of economic developments and in forecasting short- to medium-term developments.

One advantage of developing several models for key variables is that it enables one to make averages of the forecasts from the different models (forecast pooling). Such averages of forecasts have often proved more successful than forecasts from a specific model. The average may be calculated by weighing together forecasts from the different models in accordance with their in-sample and/or out-of-sample predictive performance. Forecast averaging also allows one to reconcile and accommodate differing signals provided by different models.

The existing financial programming (FP) model could also be used more actively to support policy analyses. The model could be useful for deriving policy implications within the current monetary and fiscal policy regime, where the RBM aims at ensuring consistency between fiscal and monetary development. The model may also be used for a wider range of scenario analyses rather than limiting its use to straightforward projections of key variables under a limited set of scenarios for the target variables. Scenario analyses under alternative values of the key parameters and alternative specifications of key equations may also be conducted. It would also be possible to use forecasts for other empirical models as input to the FP model, or to embed their equations into the FP model.

To structure policy discussions and macroeconomic analyses, a small macro model informed by the New Keynesian approach could be useful for policy discussions, even if it is not estimated or calibrated; see e.g. Clarida, Gali and Gertler (1999), Gali and Gertler (2007) and Berg, Karam and Laxton (2006a). Such a model should reflect a consensus view on how and what monetary

policy can achieve in the short and long run; see e.g. Goodfriend (2007).⁷⁵ The model specification must however be adapted to the features of the Malawian economy.

A calibration of the model in light of empirical evidence from Malawi, other comparable countries and economic reasoning could be envisaged, especially because of inadequate data and potentially large data measurement errors; see Berg, Karam and Laxton (2006b).⁷⁶

During the project visits, a number of time series models and a macroeconometric model have been initiated and developed to overcome the lack of such models in the short run and to start the process of model development. Below, we elaborate somewhat on the properties of these models, which should be developed further.

4.2. Time series models

Time series models may be useful for forecasting over short horizons. Such models rely on own history of variables and are therefore easy to develop, maintain and use. Such models extrapolate the past into the future. Univariate (linear) time series models, i.e. AR models, of e.g. inflation and GDP growth have also been found to have impressive forecasting performance relative to more complicated time series or econometric models.⁷⁷

Univariate models can also be used to cross check forecasts from alternative models. Large deviations between forecasts from these models and those from other (internal and external) models would warrant a closer look at the assumptions behind the forecasts from the alternative models.

Multivariate time series models, i.e. VAR models, of target and policy instrument variables may not only be useful for forecasting the variables, but may also be developed further as ‘structural VAR’ models to trace the effects of e.g. unexpected changes in monetary policy on target variables, such as inflation, GDP and/or exchange rate.⁷⁸

During the technical cooperation project, time series (including VAR) models for a number of key economic variables were developed, including models for consumer price inflation and its sub-components food and non-food inflation, M1, M2 and the real effective exchange rate.

⁷⁵ Clarida, R., J. Gali and M. Gertler (1999): “Towards a new science of monetary policy”. *Journal of Economic Literature*. Gali, J. and M. Gertler (2007): “Macroeconomic modelling for monetary policy evaluation”. *Journal of Economic Perspectives*. Vol. 21, 4, pp. 25–45. Berg, A., P. Karam and D. Laxton (2006a): “A practical model based approach to monetary policy analysis—An overview”. IMF Working Paper 06/80. Goodfriend, M. (2007): “How the world achieved consensus on monetary policy”. *Journal of Economic Perspectives*, Vol. 21, 4, pp. 47–68.

⁷⁶ Berg, A., P. Karam and D. Laxton (2006b): “A practical model based approach to monetary policy analysis—A how to guide”. IMF Working Paper 06/81.

⁷⁷ See studies by J. H. Stock and M. W. Watson

⁷⁸ See e.g. Christiano, L. J., M. Eichenbaum and C. L. Evans (1999): “Monetary policy shocks: What have we learned and to what end?” *Handbook in Macroeconomics*, Vol. 1, Part A, pp 65–148

4.3. Macroeconometric models

These models characterize the short and/or long-term relationship between economic variables. They enable one to partly explain and shed light on current and past behavior of variables of interest as well as their forecasts. The different channels for the transmission of monetary policy changes, such as that for interest rates, credit, asset prices and exchange rate, can be explicitly modeled. Such models are therefore useful for monetary policy analyses and scenario analyses under different assumptions about monetary policy and exogenous variables, such as commodity prices, foreign interest rates, inflation and GDP growth.

During the technical cooperation project, small macroeconometric models based on monthly and quarterly data were developed. The model based on monthly data was composed of five equations for consumer prices, broad money (M2), the industrial production index, the nominal exchange rate and the lending interest rate, respectively. The model is briefly presented in Appendix 1 to this Chapter. As shown, the equations are interpretable and largely consistent with the quantity theory and the purchasing power parity theories. The model based on quarterly data contains the same endogenous variables, with the exception of industrial production⁷⁹, which is replaced by GDP. Due to lack of quarterly GDP data, a quarterly series was constructed using quarterly import data as an indicator for quarterly movements in GDP as there seems to be a strong contemporaneous relationship between annual GDP and import figures.

4.4. Software for model building and use

The time series as well as the macro econometric models have been implemented in EViews together with routines for using them for nowcasting and forecasting. Routines for pooling forecasts from the different models as well as for intercept adjustment have also been implemented. Moreover, EViews routines have been developed for undertaking analysis of different shocks and for reporting model results as tables and graphs in different formats. This should make it more efficient to integrate model-based forecasts and analyses into the policy papers. The choice of Eviews has been made in light of its user friendliness. Also, some staff members of the RSD were already familiar with Eviews.

5. Organization of work regarding model development, forecasting and policy analyses

It has been recommended that all three divisions in the RSD should contribute to the development of models and their use for short-term forecasting (nowcasting). By involving all of the three divisions in nowcasting, one will benefit from data analysis skills, insight and judgment about key time series within the different divisions' areas of responsibility. In addition, this would contribute to integrating the three divisions and maintaining and developing the human capital in different areas of responsibility of the RSD. This would also ease mobility between the three divisions of the RSD in particular.

⁷⁹ The quality of this series needs to be examined.

However, using the nowcasts and judgment of the sector specialists in all three divisions as input, would require that they ensure collaboration to draw a coherent picture of the present state of the economy as well as its near- and medium-term future. Moreover, in light of that picture, one should also discuss policy implication under different scenarios, given the uncertainty regarding data, model and future shocks. Macro models would be useful in drawing a consistent picture of macroeconomic developments and policy analyses under the baseline as well as alternative scenarios.

The process of using models for policy analysis and forecasts each month needs to be planned and formalized. A calendar with details of the different parts of the forecasting process would need to be communicated among the staff, immediately after an MPC meeting; the RSD produces an integrated policy paper for the MPC which summarizes documents prepared by its divisions and by other departments of the RBM. Furthermore, to systematically learn from the process of preparing each of the monthly documents, one should reflect on the previous forecast round and discuss issues related to data and/or models, or other issues of interest such as further analysis of different kinds of shocks as well as policy changes that may have an impact on future forecasts. In particular, it would be important to evaluate previous forecasts of variables of interest as new figures are released. For example, one should set aside time for an analysis of forecast errors as soon as possible after the release of new CPI and money growth numbers and of other variables that have been forecasted. We refer to Laxton, Rose and Scott (2009) for suggestions regarding planning of the forecasts round and institutionalizing learning from the forecasts round.⁸⁰

6. Challenges regarding model development and their use

Chapter XI deals with development of an efficient infrastructure for updating databases and making them available to model builders and users as well as other analysts at the RBM and the public. Easy access to long and updated time series will greatly facilitate model development and use. However, one of the other main challenges regarding model development and their use include lack of statistics in many key areas and uncertainty regarding the quality of available statistics. Another major challenge is lack of adequate staff with experience in constructing and solving theoretical and/empirical models and applying them for forecasting and policy analysis combined with sound judgment. In the following, we briefly describe the data coverage, human resource situation and steps taken or being implemented to meet some of the challenges.

6.1. Data coverage and quality

The data situation in Malawi generally constitutes a challenge for economic analyses and model development. The coverage, timeliness and periodicity of economic statistics are inadequate in many areas and the reliability of some components of available statistics is uncertain, including that of key variables such as CPI and indices of economic activity such as industrial production. The IMF's General Data Dissemination Site/Malawi (GDDS) provides a comprehensive

⁸⁰ See Laxton, D., D. Rose and A. Scott (2009): Developing a structured forecasting and policy analysis system to support inflation forecast targeting. IMF Working Paper WP/09/55; <http://www.imf.org/external/pubs/ft/wp/2009/wp0955.pdf>

overview of the current state regarding economic statistics and plans for improvement in Malawi.⁸¹

Nonetheless, the data for the fiscal sector, monetary sector, external sector, and consumer prices (CPI) are fairly comprehensive and timely produced every month. For instance, the CPI is published with a lag of two weeks, while monetary and merchandise trade data are published with a lag of about three to five weeks. A monthly index for industrial production is published with a lag of two to three months.

With no monthly labor market statistics and a general lack of current, cyclical economic statistics, the RBM's short-term assessments of Malawi's current economic situation have to be based on a limited number of partly unsatisfactory indicators. There are few macroeconomic data at higher frequencies than one year, apart from the CPI and industrial production index and some periodic business surveys, covering e.g. different entities that provide crop estimates for various agricultural commodities. Although the lack of data and somewhat variable data quality are challenges that could hamper the development of models, our analyses based on the available data suggest that they may provide valuable information about the Malawian economy and the effects of monetary policy.

Areas where availability and improvement of statistics could prove useful for assessing the state of the economy are real estate and house prices, commodity prices, the labor market, and the real and financial economy. The Malawian authorities are making efforts to improve quality and timeliness of economic statistics. With the assistance of the IMF and Statistics Norway, real sector statistics covering the national accounts, as well as prices and trade statistics are being improved. The National Statistics Office (NSO) also plans to introduce a Labor Force Survey in 2010 to compile data for employment and wages. Currently, in order to extend coverage of statistics, more variables have been included in the Business Interviews Questionnaire that is jointly undertaken by the RBM and the government.

To overcome the lack of statistics on economic activity at higher frequency than a year and with short publication lags, the RSD is considering compilation of new series as well as using available series more systematically and efficiently to assess the likely state of the economy in the recent past, present and the near future. Such available series may include daily and weekly observations of financial data and information from the media. Such additional information may also be used to cross check available data and forecasts.

The RBM has developed closer contact with the NSO where the RBM can raise technical as well as other issues related to economic statistics. Such meetings would provide a venue for providing feedback to the NSO on statistics from one of its major users, namely the RBM. At such meetings, questions regarding existing and new series may be raised and requests to publish new series may be made.

⁸¹ <http://dsbb.imf.org/Applications/web/gdds/gddscountrycategorylist/?strcode=MWI>

The RSD is establishing routines aimed at reducing internal, and if possible, external lags in the publication of data. Data, models and their output are information sets that must be well managed to be fully and efficiently utilized in research and policy analyses. As outlined in Chapter XI on Databases, the accessibility of available data to users has been improved through the establishment of the RSD's new database that contains historical data. A model database containing a smaller number of series used in the models as well as procedures for updating the database have also been established. This database contains observations of variables used in the different models developed by the RSD. In addition, a database containing forecasts as well as historical data for variables forecasted has been established to contain the (final) forecasts made by the staff of the RSD. Staff in the other departments of the RBM will also have access to this forecast database. Different reports, speeches and internal and external presentations will draw on this data base.

In order to decompose and identify the sources of the forecast errors it is necessary to maintain the forecast database. Such analyses may be helpful in guiding further improvement in models and data. It would also be necessary to maintain the forecast database to evaluate the RSD's forecasting performance over time and the value-added of staff's judgment relative to that of the models.

6.2 Human resource and technical know-how

Some members of the RSD have developed empirical models to analyze specific issues related to the Malawian economy, and they are familiar with using software such as EViews and Stata. Also, the RSD mainly uses Excel for data handling and the staff members are well experienced in using it. At the start of the technical cooperation project, none of the staff members of the RSD had EViews installed on their PCs, however. Recently, an adequate number of EViews licenses have been acquired for the RSD staff, which has started using it more regularly. Model development and systematic use of models will, however, require more investment in programming competence. It will also require that staff members become more familiar with standard econometric methods and related software, and recent advances in macroeconomic theory and monetary policy. They may then efficiently draw on the large econometric and macroeconomic literature and practices of other central banks regarding development and use of models. Also, recruiting and/or affiliating staff with specialization in computational methods, econometrics and advanced macroeconomic theory would benefit the development and use of the models.

To overcome some of these obstacles to model development and use, a five-day workshop was organized during the technical cooperation project. In addition, guidance and technical assistance was provided to most members individually. The workshop included lectures on basic econometrics followed by demonstrations of lessons learned in EViews. A substantial amount of time was devoted to using models for forecasting and policy analyses covering issues such as intercept adjustment, forecast averaging, scenario analyses and stress tests. The workshop focused on building and using time series and econometric models.

Model development and systematic use of models require an efficient management of available data. Ideally, any staff member should be able to get any time series from the databases that the RBM maintains and subscribe to it without assistance from other staff members. Given the likelihood that some human resource constraints will remain also in a medium term perspective, any extension of the model suite with models of a class that is different (Bayesian econometrics, DSGE or sophisticated non-linear econometric models) from those in progress was not recommended. The models developed should be kept small in scale and should not be demanding to update in terms of software and data requirements.

III. Input to the monetary policy process

1. Monetary policy process

Monetary and exchange rate policy is geared towards reducing and maintaining inflation at a moderate, stable and credible level in the range of 5 to 7 percent over the medium term. The framework for monetary policy in Malawi is monetary targeting. Since the RBM has no direct control over broad money (M2), its operational target is Reserve Money (RM, with separate targets for its components, net domestic assets (NDA) and net foreign assets (NFA)). Reserve money equals banks' deposits with the RBM plus currency in circulation. The operating monetary policy targets for the RBM are a ceiling on Net Domestic Assets (NDA) of the RBM and a floor on its Net Foreign Assets (NFA). This framework protects, in principle, Malawi's weak external reserve position by ensuring a minimum level for net foreign assets. Higher official foreign currency reserves are a stated policy objective. Therefore, the RBM also places substantial weight on the stability of the nominal exchange rate. Moreover, the monetary and exchange rate policy operates within the context of restricted capital account transactions, especially as regards outflows.

The monetary policy instruments in Malawi are the bank rate (the RBM's lending rate), the liquidity reserve requirement and open market operations (OMOs). Open market operations are conducted using Treasury bills, RBM bills, discount window accommodation, Repurchase Agreements (REPOs) and sales of foreign exchange.

Monetary policy is formulated by the Monetary Policy Committee (MPC). The MPC has monthly meetings, chaired by the Governor, and comprises the Deputy Governor, the General Manager, and the Executive Director of Economic Services as voting members. There are three non-voting external members of the MPC: The Secretary of the Treasury (MoF), the Secretary for Planning, Development Cooperation, and an independent (professor) from the University. In addition, there are four non-voting members from the RBM. The Monetary Policy Implementation Committee (MPIC) is the technical arm of the MPC, meets one week before the MPC and is responsible for preparing the material for the MPC's monetary policy decisions. Monetary policy decisions of the MPC are published immediately after the decision and minutes are published two weeks (at the latest) after the meeting.

2. Integrated policy papers

Providing the MPC with a good basis for monetary policy decisions is one of the principal tasks of the RSD staff. There is no clear-cut definition of the kind of information and advice that should be presented to the MPC as a basis for the policy decisions. This depends, among other things, on the monetary policy regime and the nature of the MPC – whether for instance the committee members are full-time members or have other responsibilities in addition. Individual preferences of the policy makers may also vary. Some prefer to get “raw information” and form their own opinions on the basis of this information, while others prefer to get information that has been filtered and analyzed.

A good understanding of the current situation, the near-term outlook and of possible future risks is vital for making policy decisions. The input to the monetary policy process could therefore range from pure descriptions, based on incoming statistics, of what has happened in the economy and the financial sector since the last monetary policy meeting to medium-term forecasts with scenarios highlighting different kind of risks, and more analysis of specific, topical issues.

In 2008, the staff started to produce an integrated policy paper for the monthly MPC meeting, including policy recommendations based on discussions in the MPIC. The integrated policy paper pooled information from different departments and divisions. Given the wide range of responsibilities of the MPC members in Malawi, the move towards an integrated policy paper was welcomed. In the technical cooperation project, the content of the paper was critically reviewed with the aim of taking out less policy-relevant information and introducing, among other things, more forward-looking elements.

Previously, the input to the policy process was mainly based on a description of past developments in financial markets and available economic indicators. One may, however, argue that key documents presented to the MPC members should focus on the monetary policy objectives and the use of the monetary policy instruments. In addition, such a document should include sections on developments in the international and Malawian economy, on monetary developments and on the foreign exchange market. The text should include explanations of the development in key variables so far. It should also include forward-looking elements, including forecasts for inflation, M2 and the nominal effective exchange rate. These should be presented by graphs, which can convey main trends more effectively than tables. Moreover, there should be forecasts for reserve money and for its components NDA and NFA as well as for gross official reserves. These forecasts may be considered policy guidelines and could be part of the monetary policy decision. Factors that are likely to affect consumer prices and other intermediate objectives during the forecast period should be highlighted. In Appendix 2, a possible structure and content of the Monetary Policy Document to the MPC is outlined.

As suggested, the RBM has introduced more analytical and model-based analysis in the policy process. This has improved the basis for policy decisions, and helped in structuring the policy process. When some of the models discussed in previous sections have been sufficiently

developed and tested, forecasts for short-term developments in the Malawian economy as well as for developments one to two years ahead could be produced. “Now-casts” and short-term forecasts of key economic variables, such as the CPI, in the monthly policy papers would, together with careful judgment, be one way of introducing more forward-looking elements in the policy notes and would only require moderate resources.

It has been suggested that a more comprehensive policy paper to the MPIC/MPC should be issued quarterly (or half-yearly), discussing medium-term economic developments, monetary policy options and possible risks. Such a holistic paper may include model-based forecasts and analyses. The discussions of policy options could be made in light of the monetary transmission mechanisms implied by these models together with sound economic reasoning. The policy analyses might also draw on the available FP model. The output from the empirical models could serve as input to the FP model and provide a basis for discussing different policy options and the necessary conditions for reaching monetary policy targets.

In the intermediate MPC papers, actual developments could be compared to the baseline scenario as a point of reference. Small time series models for prices and the money supply (which should be easy to operate when an adequate system is in place) could be used to update short-term projections (one to three months) for these variables, indicating whether developments are on track. As noted earlier, an efficient data management system would be essential for the efficient production of policy papers and for undertaking analytical work, and should have high priority in a process of raising the standard of economic analysis.

IV. Communication of monetary policy

Communication of monetary policy is an essential part of the monetary policy process and it has received increasing attention in recent years. The recent consensus is that central bank communication should be open, correct and predictable, both in order to increase the effectiveness of monetary policy and to ensure the accountability of the central bank. The degree of openness is debated, but there seems to be little disagreement about the desirability of a high level of transparency. While too much information may foster misunderstanding and speculation in the market, too little information may have the same effect by creating uncertainty and unfounded expectations that may again give rise to speculation. In general, communication of monetary policy is essential to informing market participants and anchoring inflation expectations, and central banks have accordingly been putting more and more weight on communications strategy.

In the technical cooperation project, some steps in the direction of increased transparency were recommended. It was suggested that the RBM should consider increasing the information content of the published minutes from the MPC meetings by stating more clearly the reasoning behind monetary policy decisions. A press conference in connection with the MPC meetings might reduce possible misunderstandings and contribute to “educating” the public. It was also

suggested that a calendar for the MPC meetings should be published in advance to increase predictability and ensure that market participants receive the information simultaneously.

1. The external reports of the RBM

A basic role of regular central bank reports is to provide a reference point and general orientation for a broad group of users, enhancing public awareness of economic events and trends. The value added of regular central bank reports lies in assembling a relevant selection of economic data and making them available in a convenient format to a broad audience. Another function of regular reports can be described as the promotion of economic education. These objectives are mostly directly served by analysis and commentary on the data provided, and by explaining economic interrelations and the functioning of policy.

The RBM produces the following external reports:

- Monthly Economic Review
- Financial and Economic Review (quarterly)
- The Central Banker (bi-annual)
- Report on Financial Stability (bi-annual)
- Report and Accounts for the year ending 31st December (“Annual Report”)

The RBM’s regular reports are a major source of timely information to the public on economic and monetary trends in Malawi. Although the content and structure of the RBM’s regular reports have proved useful for a broad group of users, the usefulness could be enhanced by introducing more analysis and commentary on the data provided, and by explaining economic interrelations and the implementation of policy. A Working Paper Series to present more technical analyses from the RBM staff to a broader audience will also be introduced.

In the technical cooperation project, the external reports of the RBM were reviewed. While the Financial and Economic Review may be developed further as the RBM’s main regular statistics and economics publication, the Monthly Review may continue to be primarily a statistical publication. Introducing more signed articles in the Review could act as a motivation for the economists to develop more analytical work. This could in turn contribute to expanding knowledge about the Malawian economy and improving the basis for monetary policy decisions. The articles could be relatively short and not too technical. Longer, more technical research-oriented analyses could be published in the Working Paper Series. The articles could also be from other areas of the RBM and cover topics such as payment systems, liquidity policy, etc.

The comments and analyses in the quarterly Review may not be limited to the latest quarter, but may address longer time spans if this is of relevance for examining economic and monetary developments. Extended graphs, covering longer runs of data, would also improve the basis for commenting on longer-term developments. The regular part of the report could also contain smaller boxes that comment briefly on specific developments. A section on the implementation of monetary policy may also be included in the regular part of the Review.

With regard to the Annual Report of the RBM, the RBM may consider expanding the report on the conduct of monetary policy in order to increase the transparency of monetary policy. The RBM may also consider reporting on other activities in line with best practice in other central banks. This would increase the accountability and transparency of the RBM vis-à-vis the political authorities and the public, and at the same time provide information about the activities of the central bank.

An annual central bank report may contain the following elements:

- Economic overview
- Conduct of monetary policy in the year under review (incl. market operations etc)
- Foreign exchange controls
- Foreign reserves management
- Payment systems, incl. notes and coins
- Risk Management
- Financial stability and supervision (very short as it is covered in a separate report)
- Other activities
- Organization, management and use of resources

Many central banks now publish some of their publications only on the internet. The advantage of this is that it saves costs and eliminates the time-lag between production and publication. The last aspect may be of importance if the central bank produces analyses of current economic events that may be of interest to the general public, but that will be more or less outdated if they were to be presented after a regular printing process. A number of central banks have started publishing short “Economic Commentaries” (signed by the author) covering current economic events, often based on internal analyses performed as part of the regular work at the central bank. In order to secure the quality of the articles published externally, an Editorial Committee may be established. The task of the Editorial Committee would be to review and select articles to be published on the basis of suggestions/outlines sent in by the different departments/authors before a specific deadline adapted to the respective publication.

APPENDIX 1

Models developed during the project visits

1. Time series models for forecasting inflation and its subcomponents

During the project visit, univariate time series models for forecasting annualized consumer price inflation and its two subcomponents, food and non-food price inflation, have been developed on monthly data. The models are presented below, where π denotes the annual growth in the consumer price index, while π^F and π^{NF} denote annual growth in the food and the non-food components of the consumer price index, respectively.⁸²

$$\begin{aligned} (a) \quad \pi_t &= 0.99 \pi_{t-1} - 0.34 \pi_{t-5} + 0.36 \pi_{t-6} - 0.34 \pi_{t-12} + 0.0098 \\ &\quad \text{(23.5)} \quad \text{(3.38)} \quad \text{(4.20)} \quad \text{(-3.73)} \quad \text{(3.25)} \\ (b) \quad \pi_t^F &= 1.10 \pi_{t-1}^F - 0.33 \pi_{t-4}^F + 0.20 \pi_{t-6}^F - 0.09 \pi_{t-12}^F + 0.016 \\ &\quad \text{(21.1)} \quad \text{(4.19)} \quad \text{(3.07)} \quad \text{(-2.36)} \quad \text{(2.33)} \\ (c) \quad \pi_t^{NF} &= 1.20 \pi_{t-1}^{NF} - 0.27 \pi_{t-3}^{NF} + 0.0099 \\ &\quad \text{(21.7)} \quad \text{(5.39)} \quad \text{(2.57)} \end{aligned}$$

The models have been specified as autoregressive models of order 12 on monthly data for the period 2001m2—2007m12. Statistically insignificant terms have been left out for the sake of parsimony. The models obtained are quite simple and offer fairly good forecasts over especially short time horizons.

As noted earlier, there is some uncertainty regarding the consumer price index, especially because of its food price component. Evaluations of these models and of the econometric models for consumer price inflation and the industrial production index, which are presented next, have to await the recommended review of these time series.

2. Econometric model of Malawi based on monthly data

The macro econometric model for Malawi has been developed using monthly data since the mid-1990s. The model is composed of five equations for (log of) domestic consumer prices (p), broad money ($m2$), industrial production (ip), the nominal effective exchange rate (e) and the (not logged) lending interest rates (lr), respectively. The equations for the nominal exchange rate and the lending interest rates have been estimated on data from the year 2002 onwards to better reflect their behavior under the current monetary policy regime. The central bank interest rate (br) and trade-weighted foreign consumer prices (pf) are considered exogenous variables.⁸³ The data source is the RBM. The model characterizes both short and long-term relationships between the variables.

⁸² Annual inflation in e.g. CPI is defined as $(CPI_t - CPI_{t-12}) / CPI_{t-12}$, as the twelfth log-difference of CPI, does not provide a good approximation of the relatively high annual inflation rates in Malawi.

⁸³ In future work, one may also investigate further the possible relationship between the central bank interest rate and the other variables in the model, as we have been unable to find a significant (linear) relationship between them and the central bank interest rate.

The five model equations are presented below, while details about their econometric properties can be found in the next sub-section. Here, Δ denotes first difference, “seasons” indicates use of equation specific seasonal dummies, “ids” indicate use of impulse dummies, while “ π ” is annual consumer price inflation (defined precisely). Parentheses below coefficient estimates provide the corresponding “t-values”.

$$\begin{aligned}
 (1) \quad \Delta p_t &= \underset{(9.8)}{.45} \Delta p_{t-1} + \underset{(3.9)}{.27} \Delta p_t^f + \underset{(3.2)}{.22} \Delta p_{t-1}^f - \underset{(-3.3)}{.12} \Delta usd_t - \underset{(-1.62)}{.01} (p - (p^f - e))_{t-1} \\
 &\quad - \underset{(-6.10)}{.07} (p - (.6m - .9ip))_{t-1} + \underset{(2.28)}{.04} \Delta ip_{t-1} - \underset{(-2.11)}{.09} \Delta (lr - \pi)_{t-3} + \underset{(5.78)}{.25} + seasons \\
 (2) \quad \Delta m2_t &= \underset{(2.7)}{.19} \Delta m2_{t-1} - \underset{(-4.29)}{.10} (m - (1.2p + .24ip))_{t-1} - \underset{(-2.07)}{.16} \Delta (p - (p^f - e))_t - \underset{(-3.98)}{.27} + seasons + 2ids \\
 (3) \quad \Delta e_t &= \underset{(2.65)}{.21} \Delta e_{t-1} - \underset{(-3.65)}{.04} (e - (p^f - p))_{t-1} + \underset{(1.17)}{.56} \Delta p_{t-3}^f - \underset{(-1.12)}{.12} \Delta p_{t-3} + \underset{(2.44)}{.33} \Delta br_t + \underset{(3.49)}{.18} + 3ids \\
 (4) \quad \Delta ip_t &= \underset{(-5.30)}{-.31} (ip - 4.7)_{t-1} - \underset{(-2.68)}{.12} \Delta (lr - \pi)_{t-1} - \underset{(-1.05)}{.14} \Delta (p - (p^f - e))_{t-5} + \underset{(1.72)}{.23} m_{t-2} + \underset{(1.9)}{.002} + seasons \\
 (5) \quad \Delta lr_t &= \underset{(23.9)}{.86} \Delta br_t + \underset{(2.40)}{.088} \Delta br_{t-1} + \underset{(1.94)}{1.3} \Delta ip_t - \underset{(-1.71)}{.11} (lr - br)_{t-1} + \underset{(185)}{.23}
 \end{aligned}$$

It is found that the quantity theory of money and/or prices and the purchasing power parity theory of prices and/or exchange rate are useful for characterizing and interpreting the relationships between the variables. The results also suggest that prices as well as money adjust towards the relationship implied by the quantity theory of money and/or prices, in the latter case also termed the p -star theory of prices, in the long run; see equations (1) and (2). The long-run coefficients defining the relationship are, however, different from their theoretical values which could be an artifact of the coverage of the consumer price index and the relatively small share of the economy represented by the industrial production index.⁸⁴ Analyses based on data from, e.g. OECD economies, though consistent with the quantity theory, are notably different from other analyses in that prices tend to fall in response to an increase in industrial production or other measure of economic activity. One explanation could be that (agricultural) production is largely supply determined and hence, an increase would be expected to place downward pressure on prices. We also find that the nominal exchange rate reflects domestic prices relative to foreign prices in the long run, consistent with the purchasing power parity hypothesis.

In the short run, there is exchange rate pass-through from exchange rate changes to prices and vice versa; see equations (1) and (3). In particular, pass-through effects of devaluations of the Malawian Kwacha relative to the USD have been numerically and statistically significant. These are captured by the term “ Δusd ” in the price equation. There are also short-run effects from foreign prices to domestic prices while the exchange rate tends to appreciate in response to

⁸⁴ The long-run coefficients associated with money and industrial production in the price equation (1) have been derived by estimating (a general version of) the equation with one lag of prices, money and industrial production unrestricted. The long-run coefficients, associated with prices and industrial production, in the money equation (2) have been obtained by renormalizing with respect to money. The coefficient estimates depend on the specifications of the equations given the relatively small sample. The long-run coefficients defining deviations from purchasing power parity in equations (1) and (3) have been imposed.

higher inflation abroad. The model equations also suggest that an increase in real and nominal interest rates, respectively, contributes to lower prices and an exchange rate appreciation in the short run.

Industrial production responds as expected to change in real interest rates and real exchange movements; see equation (4). However, industrial production has been fluctuating at about the same level since the mid-1990s. The model captures this feature by assuming a mean-reverting behavior of industrial production. Accordingly, fluctuations in real interest rates and exchange rates contribute to explain fluctuations around the sample level of industrial production. The lack of a trend in industrial production, which one would generally expect, could be an artifact of the coverage of the industrial production index. A closer examination of the index may reveal whether the movements in the index are representative for the industrial sector as a whole.

The evidence also suggests that a change in the central bank rate is almost fully transmitted to the lending rate in the same month as the change in the central bank rate while the remaining effect appears with a lag of one month; see equation (5). This suggests a relatively fast transmission of monetary policy decisions to market interest rates. The spread between the lending rate and the central bank rate narrows with a long delay, though.

We have undertaken a number of impulse response analyses using the model. Briefly, in response to a temporary increase in the central bank interest rate, industrial production and money growth decline, while the exchange rate appreciates. Prices fall in response to the fall in money growth and the exchange rate appreciation, and because of the increase in the real interest rate. However, the decline in industrial production places an upward pressure on prices and hence, they start increasing. Thus, the initial decline in prices is outweighed and prices are not significantly affected by the change in the interest rate.

In contrast, a reduction in the money balance has substantially stronger effects on domestic prices in the long run and on industrial production in the short run. The money reduction also contributes to an exchange rate appreciation because of the fall in domestic prices. A change in broad money can be brought about by monetary authorities through changes in the deposit requirements facing commercial banks, i.e. the LRR. The reduction in money balance could also reflect a reduction of the floor for NFA or a lowering of the ceiling for net domestic credit.

Finally, the model implies that the effects of a devaluation of the exchange rate would be temporary. In the short run, industrial production increases, but prices also increase, which again contribute to a depreciation of the exchange rate. Consequently, in the long run, the exchange rate reverts to its equilibrium value defined by domestic prices relative to prices abroad.

The model has been implemented in EViews where the code provided allows one to estimate the model and use it for forecasting and policy analyses. Hence, it can be used as a template for related work.

It should be stressed that the model is work in progress. We recommend that the model be examined further to assess the adequacy of the specifications of the equations, and the sensitivity of results to alternative measures of the variables and data at e.g. quarterly frequency.

Statistical properties of the econometric model's equations

In the following, we provide further details regarding the specification of the equations and their statistical properties. It is shown that the equations are econometrically quite well specified. Specifically, the standard assumptions regarding the residuals and the model specifications are not rejected at the standard levels of significance. The exceptions are the assumptions about the residual variance in the CPI equation and that of normality regarding the residual in the lending rate equation (5) which are rejected. These violations are probably due to the shift in the seasonal pattern of price changes and the stepwise behavior of the lending rate over time. The details are offered in the table below, where "S.E." refers to the estimated standard error of the corresponding equation, RESET denotes regression specification test while the other symbols should be self-explanatory. The p-values are provided in hard brackets while two stars indicate rejection at the 1 percent level of significance.

Table 1: Model diagnostics

Equation	Eq. 1: CPI	Eq. 2: M2	Eq. 3: IPI	Eq. 4: NEER	Eq. 5: LR
S.E.	0.017	0.042	0.083	0.020	0.53
R-sq	0.80	0.36	0.22	0.61	0.90
AR 1—5	2.11[0.07]	2.22[0.06]	1.42[0.22]	1.02[0.41]	1.18[0.33]
Heterosced	2.67[0.00]**	1.28[0.25]	0.75[0.68]	0.67[0.78]	2.01[0.06]
Normality	3.58[0.17]	0.718 [0.70]	3.21[0.20]	0.15[0.93]	36.89[0.00]**
RESET	0.00[0.99]	1.41[0.24]	0.45[0.50]	0.50[0.48]	1.71[0.20]
Sample	1995m6- 2007m12	1995m6- 2007m12	1995m6- 2007m12	2002m1- 2007m12	2002m1- 2007m12

The CPI equation contains six seasonal dummies for January, March, June, August, September and October. The equation diagnostics in the second column suggest shifts in the variance of the residuals; the null hypotheses formalizing absence of heteroscedasticity are rejected at the 1% level of significance. This is mainly due to a shift in the seasonal pattern of the price changes. The other tests do not reject the absence of autocorrelation, normality and the functional form at the standard levels of significance.

The broad money (M2) equation includes two seasonal dummies for January and February, respectively, and two impulse dummies for 1996m5 and 1996m6. The latter are required to capture two relatively extreme money growth observations in the corresponding months.

The equations for industrial production and nominal effective exchange rate satisfy the standard tests, especially when dummy variables are included to capture some of the sharp movements. The industrial production index (IPI) equation includes one seasonal dummy for March. The exchange rate (NEER) equation is estimated over the period 2002m1—2007m12 and includes three impulse dummies for the months 2002m8, 2002m12 and 2003m8. The other variables in the model are unable to explain the relatively large corresponding fluctuations in the exchange rate.

The lending rate equation (LR) is also estimated over the period 2002m1—2007m12. The normality of the residuals is rejected due to stepwise shifts in the interest rates.

APPENDIX 2

A more focused monetary policy document

A possible outline of a monetary policy report with suggestions for the content of the different sections is set up below.

Development and prospects for consumer prices

The development of consumer prices could be illustrated by a graph with the 12-month change in total consumer prices, food prices and non-food prices. The graph should include forecasts for the next one to two years. Different models for forecasting inflation could be used. The text should include explanations of the development in inflation so far. Factors that are likely to affect consumer prices during the forecast period should be highlighted.

Developments in the international economy and commodity prices

This section should be relatively brief and highlight developments that may have an impact on the Malawian economy, such as economic growth in major trading partners and commodity price development for major export and import goods. It could contain one table or graph that highlights the development of GDP for the world and sub-Saharan Africa. A corresponding table or graph for relevant export/import prices and consumer prices could also be included. Export weighted growth in Malawi's main export markets could be added if feasible. Similarly, a graph on import-weighted consumer price inflation in Malawi's import markets could be added if feasible. The development of the price of major imports might also be included.

Developments in the Malawian real economy

The discussion should be at an aggregated level, ideally using GDP. A table or graph for GDP with a forecast one to two years ahead should be included. Other indicators such as industrial production, exports and imports and measures of agricultural production may be used to describe recent developments and the outlook. In this section, information from domestic business surveys and economic growth estimates from other institutions (e.g. the IMF) may also be presented.

Monetary developments

The developments should also be described at the aggregate level. The development should be illustrated by graphs concentrating on the 12-month growth in M2 and the main credit aggregates (credit to the public and private sectors). A forecast for the growth of M2 one to two years ahead could also be included.

Foreign exchange market

This section should contain a graph with, for instance, the USD, EUR and ZAR exchange rates as well as the effective nominal exchange rate. The changes in the exchange rates should be commented on and a forecast for the nominal effective exchange rate could be provided. A graph showing the development of gross official reserves and private sector reserves, as in the

present report, could also be included. The graph could be extended with a one- to two-year forecast of gross official reserves. In addition, a graph showing net official reserves (NFA) and the target for net official reserves could be included.

Money market and money market operation

A table showing the factors influencing RM should be included. In general, the changes that are exogenous to the RBM, such as net government fiscal operations, and to some extent net forex operations and net government lending operations, should be commented on first. One could say fiscal policy contributed xx billion kwacha to reserve money, government lending operations contributed yy billion kwacha, and foreign exchange operations contributed zz billion kwacha. Then the different open market operations could be commented on, and it could be concluded that they either neutralized the increase (decrease) from the other factors, or partly neutralized the effects etc., depending on what the outcome for the exogenous factors and the open market operations were. In addition, the net result should be compared with the target for RM. Finally, a forecast for RM should be provided, as in the present paper

Interest rates

Although interest rates are not a prominent feature of the present monetary policy framework in Malawi, they may influence the behavior of economic agents. Furthermore, interest rates have a prominent role in the monetary policy framework in many other countries, and they may have a more prominent role in a future monetary framework in Malawi. This chapter should contain a graph showing the main interest rates in Malawi, including the bank rate, the interbank rate and the lending rate. A forecast for the lending rate could be provided.

Assessment and conclusion

The development and prospects for inflation, the real economy, the foreign exchange market and the money market should be assessed. The developments should also be assessed against the targets for gross and net foreign assets and domestic assets of RBM.

Policy recommendations

The policy recommendations should include the bank rate, the liquidity reserve requirement and open market operations. The recommendation regarding open market operations could be made more specific than in the present paper. It could, for instance, contain a guideline on whether unexpected developments in the exogenous factors affecting RM should be neutralized, or it could define a path for the development of RM, if needed, with some leeway for departing from the path.

Chapter XIII

Central Bank Modernization – Interim General Assessment of the Technical Cooperation Program between the Reserve Bank of Malawi, the International Monetary Fund and Norges Bank, 2006-2009

Mary G. Zephirin⁸⁵

I. Introduction

I paid a visit to Malawi after the first year of the second phase of the technical cooperation program between the Reserve Bank of Malawi (RBM), the International Monetary Fund (IMF) and Norges Bank to evaluate progress so as to:

- Make the usual assessment report
- Address any issues identified

Since the technical cooperation program had the characteristics of a pilot, a more detailed approach to program evaluation was adopted, with a view to identifying features peculiar to the program (see Appendix on methodology). In meetings at the IMF, the Malawian authorities had indicated a high degree of satisfaction with the program, and it was of some interest to learn the reasons for the very positive view of the assistance.

The evaluation identified three important factors contributing to the success of the project:

- follow-up to the expert visits by both the resident advisor and the experts themselves, and the pro-active role of the resident advisor,
- the comprehensiveness of its coverage, and
- the active involvement of the RBM

The discussion below first considers the results of the technical cooperation, and then goes on to identify the features adduced for its success, some of the characteristics that distinguished the organization of the program from other technical cooperation modes, and how this was helpful. It also identifies the difficulties encountered and ways of improving the technical assistance and the likelihood of its successful delivery.

⁸⁵ Mary G. Zephirin is Deputy Division Chief in the Africa Regional Division of the Monetary and Capital Markets Department of the IMF. She conducted the interim general assessment of the technical cooperation program in January 2009. The views expressed here summarize, often using the same phrases, the interviews held in Lilongwe on the basis of the methodology described in the appendix.

II. The impact of the program

The program has resulted in two very visible types of changes in the RBM – governance/institutional or structural and operational. Both of these impact positively on policy-making capacity and capabilities, though the overall effect in improving policy may still take some time to be seen.

Structural changes Following the recommendations in July 2007 and the RBM's internal discussions, the reporting structure was changed from July 2008 to create four functional areas: Corporate Services, Support Services, Supervision of Financial Institutions and Economic Services, each headed by an Executive Director, reporting to the Deputy Governor (first two functional areas) and the General Manager (second two). This has improved the reporting structure of the Bank, increasing responsibility and accountability at levels below top management (considered here as the Governor, Deputy Governor and General Manager), to enhance decision making, a point made by several RBM staffers. Prior to the governance changes, an unclear mandate was seen as a constraint on the effectiveness of the RBM by some departments.

Operational changes. Work processes in the RBM have improved as a result of the new practices acquired in the course of the technical cooperation. Flowing also from the structural change above, performance assessment and business plans are formulated at the functional level and have to be justified by the Executive Directors. Papers prepared for the Monetary Policy Committee (MPC) have become more focused and useful. The RBM staff believes that their objectives are not fully accomplished, but see the onus as now being on them to achieve the objectives.

Objectives are still in the process of being accomplished, but significant progress has been identified in several areas. Among the major achievements has been helping the RBM obtain the knowledge required to change their systems and convince the banks to change. However, it will take some time to see the full benefits of this program. The areas identified as having had significant success are liquidity forecasting, payments oversight, currency management, accounting strategy, performance review processes and institutional change promoting increased responsibility and accountability. Monetary operations are also becoming more effective with the banks beginning to respond, and the papers prepared for the MPC have improved, using a liquidity forecasting and general framework developed through the technical assistance. Liquidity forecasting was used as an example to demonstrate the advantages of the program's technical assistance mode. Earlier technical assistance on this subject area required more follow-up than was available. The interviews suggest that follow-up and continued collaborative interaction are key factors in improving capacity building.

The technical cooperation has provided for coherent and cohesive work with the IMF's African Department team and has accomplished smooth working relations with the team. RBM feedback to the IMF's African Department team on the technical cooperation program has always been very positive, and supportive of the majority of the recommendations. The effectiveness of the technical cooperation is demonstrated by the changes currently underway in organizational review, currency reform, and strategy and risk.

The RBM has produced and is producing more integrated papers which help to inform policy decisions, e.g. on the exchange rate. These papers provide backing for policy at a more basic level – the technical work facilitated by the technical cooperation has supported policy work and the technical cooperation has been effective from the point of view of both the RBM and the staff of the IMF’s African Department working on Malawi.

Overall, the Monetary and Capital Markets’ (MCMs’) clients view the technical cooperation as having improved the efficiency and productivity of the RBM, with significant technical and institutional input which has been absorbed into the working practices of the RBM.

III. Factors making for success

The program was universally seen as a success. The reasons given for its success are summarized below – many of these features are related to the central bank to central bank (twinning) arrangement through which the technical assistance has been delivered. However, a later section focuses on the twinning in view of its novel place in the IMF’s delivery of technical assistance.

First was the **broad-based nature of the technical cooperation**, covering every aspect of the RBM, including management issues. Second, having a long-term advisor on the ground was cited as a key factor, for the following reasons:

- The advisor’s continuous presence in the RBM has enabled him to understand the RBM, the culture of the bank, including relationships between members of staff, and their views, as well as issues of local politics. This has facilitated two-way communication. Regular bilateral meetings with the General Manager, Deputy Governor and, on request, the Governor, also facilitated communication and agreement on objectives and the work program.
- The advisor’s presence has facilitated implementation because it allows for follow-up. His presence allows for additional explanation and discussion of the project reports.
- Further, the RBM emphasized that, as a result of the advisor becoming well-fused into the system, communication is facilitated in both delivery and reception, and buy-in is much easier. Buy-in was much more difficult to obtain when recommendations are provided by short-term project visits.

Third, the **pro-active stance of the long-term advisor** was an advantage. The long-term advisor queried staff about progress, encouraged the taking of action to meet agreed goals, and was sufficiently, but diplomatically, proactive to produce improved results without being resented. Some staff described him as giving a boost in areas where he had not seen progress and raising fundamental questions where necessary – about the formation and composition of committees, for example. He also was able to provide guidance for real change rather than change in form only. Others described the advisor as persistent and results-oriented.

The relationship developed between the RBM staff and the experts. Relationships have been developed between counterparts and experts and they remain in communication by phone or

email following visits. In contrast, the usual short-term expert is frequently unavailable to discuss issues following the mission.

In addition, **study tours**⁸⁶ to Norges Bank (nine person group headed by the Deputy Governor), and neighboring central banks such as the Central Bank of Swaziland, the Bank of Tanzania, the Bank of Uganda, and the Bank of Zambia, had enabled the RBM personnel to look at different systems (accounting, currency forecasting) in operation, facilitating an understanding of how suggested changes could operate in practice, permitting acceptance of recommendations that were a source of considerable uncertainty, by allowing the RBM staff to see the results of implementation, as well as benchmarking their operations against these other central banks. The study tour also helped the RBM staff to understand what to avoid – they were taken through how things are done in the Norges Bank.

Active involvement of the RBM staff in the preparation for and summary of expert visits encouraged RBM ownership of the program, for example, draft terms of reference for each project visit were drawn up in close cooperation with the relevant department. Similarly, aide mémoires included plans of action that were also prepared with the departments involved. Implementation is carried out by the departments. The RBM does not agree with every recommendation, but was given the opportunity to explain why their decisions/operations were different, and the technical assistance has taken account of these differences.⁸⁷

Communication and organization were also very important. The reports were very comprehensive and the working methods, involving, for example, an agreed plan of action, and follow-up visits that discuss the weaknesses of implementation, have been useful. The RBM teams are totally involved in report preparation, and reports are detailed and very useful to the RBM staff. Other factors cited include:

- The quality of the short-term experts who are seasoned central bankers who have more than theoretical knowledge. In addition, they have sound academic backgrounds brought to bear on practical, operational issues. The experts have been technically competent and on top of the issues, the RBM staff has learnt a lot, and the interaction has also made the RBM staff think about things (currency reform cited as an example).
- There has been enthusiasm from the top management of the RBM, who have clearly bought into, and articulated their support for, the program, and their approach has trickled down. The management team of the RBM has been engaged by the consultants along the way and understood topical issues and best practices.
- The commitment of Norges Bank's experts⁸⁸ who provided a lot of information – Norway is seen as a partner; and the open attitude of Norges Bank's staff is appreciated by the RBM staff.

⁸⁶ The study tours to Norges Bank and the Bank of Uganda were financed by the Norwegian authorities. The other tours were financed by the RBM.

⁸⁷ While not mentioned by the RBM staff, it can be noted here that the project's technical assistance reports often recommend that the RBM prepare papers that examine the issues at hand, thus requiring their active involvement.

⁸⁸ The continuing involvement of Norges Bank experts underlines the scale and importance of the Norges Bank commitment.

- Flexibility of both Norges Bank’s and the RBM staff. The RBM staff was willing to learn and take advice. The consultants also listened to why the RBM was doing certain things and an understanding developed between the parties. Frequently, the RBM staff had found that technical assistance did not allow for joint work in which alternatives were discussed.
- The project has helped establish links between budget, risk, strategy, business plan, and performance review, allowing the RBM staff to bring all considerations together rather than treating them independently as before.

IV. Distinguishing features of central bank “twinning”

Discussions with the RBM staff and observation suggested that the “twinning” between the two institutions (RBM and Norges Bank) was very largely advantageous for the reasons indicated below, but suggested that the central bank connection had the following particular features:

- Short-term experts are usually present for too short a time to learn the dynamics of the institution and its technical shortfalls; the ongoing relationship offered continuity and flexibility.
- Absence of communication barriers – the advisor can be asked for a general view and input and provides answers to problems encountered, including obtaining additional information from other Norges Bank staff.
- Twinning was seen as supporting capacity building in a more positive way, with the use of a resident advisor combined with visiting experts being a major plus. Disjointed seminars and technical assistance visits can lead to confusion. Consideration of one model which can be adjusted is more productive. It has also been useful to share experiences at the regional level (through the SADC⁸⁹) and this complements work with Norges Bank.
- The program has taken an integrated approach whereas previous technical assistance addressed specific areas.
- Objectives were agreed for the projects and where these were not met, the constraints were examined and addressed, and this has allowed for very positive changes. One potential risk identified was that the concentration of assistance from a particular technical assistance-providing institution could be seen as building a clone institution; whereas with peripatetic technical assistance the recipient can use what they want. However, the risk was not regarded as large or likely to be realized (see next section where this is discussed in more detail).
- The RBM staff also saw the arrangement with Norges Bank as more incentive-compatible than is frequently the case. They saw Norges Bank’s staff as accountable and responsible in a way that individual experts do not need to be. Norges Bank has their reputation to consider, their short-term experts are on top of things, interested and dedicated. The usual short-term consultant was not viewed as having the same ownership and answerability. The Norges Bank experts work very hard to understand the situation on the ground because of the need to maintain their reputation.

⁸⁹ The Southern African Development Community

V. Factors creating difficulties

The difficulties identified by the RBM staff seem to have centered around the following factors, though these are not necessarily separable; i.e. different interlocuteurs stressed different aspects – in some instances also, these were provided as theoretical drawbacks, rather than concrete instances.

- There was some resistance on the part of some more senior staff. As one would expect, organizational changes always threaten established positions so that those in the positions resist change.
- Staff did not always follow up on recommendations in a timely fashion.
- Standard IMF technical assistance was seen as being able to draw upon a range of country experiences in the delivery, whereas Norges Bank was described as only providing what Norges Bank does. This was sometimes expressed as a risk that Norges Bank is “duplicated” in the RBM. However, the people who mentioned this risk also noted that it was mitigated by other factors – Norges Bank personnel were willing to say that they did not have the correct experience to do certain tasks, and encouraged visits to good practice regional central banks. The potential risk that the RBM is denying itself exposure to multicountry experience, was mitigated by the recognition that the Norges Bank experts were open in their approach, and their willingness to listen and take account of different views, as well as the risk of the other approach that the technical assistance from different consultants may have different, incompatible implications for operations. It was pointed out in this context that all aide mémoires are reviewed by the Fund and, where necessary, adjusted to reflect Fund multi-country experience, although the need for such adjustment has been very limited.⁹⁰
- The RBM staff noted that failure to meet timelines has sometimes been a source of frustration to Norges Bank, but this reflects the difference in environment – it was necessary that the people involved internalize the changes. The RBM staff also remarked that things work faster in Norway so to replicate approaches in the RBM requires considerable adjustment. For example, there are committees in the RBM that were considered unnecessary by the technical cooperation projects.
- The RBM has financial constraints and management has been trying to reduce expenditure. They are now trying to reorient expenditure towards their core functions. These changes take time.
- Financing availability has limited the number of study tours.
- The different socio-economic environment in Malawi implies that some things advocated by the technical cooperation cannot be accomplished – for example, staff reduction at the RBM.
- There is a need for ownership and more enforcement at the Senior Management level – including enforcement of deadlines.

⁹⁰ In addition, where appropriate non-Norges Bank experts were used. Both the letter of understanding with the Norwegian authorities and the project document specified that the IMF would identify, employ and supervise the experts, giving due consideration to Norges Bank staff. The medium-term, institutionally-focused nature of the project created considerable synergies in preponderant use of Norges Bank experts. It should also be remarked that the Norges Bank experts have experience of working with other central banks and international organizations

VI. Ways of improving effectiveness of technical cooperation

When asked for ideas on future improvements or on how the technical cooperation could have been improved, the following suggestions were made:

- A budget for seminars and travel should be included in future programs. This would allow for seminars among staff from within the central bank as well as workshops with a small number of regional central banker professionals, and observation visits to the regional central banks.
- More feedback from the IMF on approaches in other countries would be useful to both Norges Bank experts and the RBM.
- An enhanced relationship between surveillance work, feedback from the IMF, and technical assistance was seen as assisting in improving the contribution of the project to the macroeconomic analysis of Malawi. Similarly, more knowledge of East AFRITAC work⁹¹, improved access to IMF papers, regional studies etc. would assist the resident advisor in keeping abreast of developments⁹².
- Intensive follow-up by senior RBM staff, escalating issues to top RBM management for their follow-up when appropriate – incorporating technical assistance action plans into the RBM's strategic plan business plans
- The RBM should do a further internal evaluation of the program (an evaluation was done in April 2007)
- Reports should continue to take account of the different needs of the diverse audiences, with executive summaries to facilitate management, and with the details required by the staff on the ground.
- Evaluation could be built into consultation visits, so as to provide feedback on the spot to Norges Bank experts.
- Regular joint meetings between the resident advisor and the top management team (Governor, Deputy Governor, General Manager) could help to review implementation.
- Very short-term technical assistance is not as effective, and there is no follow-up. Long-term technical assistance is more suitable for the effective building of capacity in and modernization of the central bank. The long-term advisor is able to brief the specialists, refine their reports and maintain the links between the short-term experts and the RBM.

⁹¹ East AFRITAC is the IMF's regional technical assistance center for East Africa, including Malawi.

⁹² Since such documents are frequently posted to the IMF's website, the point here is that downloading large documents is frequently very difficult.

APPENDIX

Methodology and questionnaire

Methodology: A questionnaire was provided to the RBM and advisor about two weeks before the mission with the questions to be discussed. This questionnaire was adapted from one administered in the context of an independent evaluation of the Fund’s regional Technical Assistance Centers (TACs). Separate meetings were held with staff of individual departments of the RBM covering the areas in which technical assistance had been delivered, with the executive directors of the functional areas, and with the Deputy Governor and the General Manager. Meetings were also held with the resident advisor, the Secretary to the Treasury (representative of the Ministry of Finance on the RBM’s Board and a member of the Monetary Policy Committee), the Norwegian Embassy and the Resident Representative of the IMF. To encourage independent answers, different departments and individuals were met separately. Responses to the questions were aggregated and are summarized in this chapter.

Questionnaire: Assessment of the RBM/IMF/Norges Bank program: Central Bank Modernization

The Reserve Bank of Malawi (RBM) – issues for discussion

1. Background to your organization
 - 1.1 Which of the following factors constrain the effectiveness of your RBM?

Lack of clarity of role and mandate of the organization	Yes/ No
Current levels of financial resources	Yes/ No
Management and internal organizational factors	Yes/ No
Inability to attract and retain high quality staff	Yes/ No
Inadequate technical skills of staff	Yes/ No

Please circle the appropriate answer.
 - 1.2 How are the technical assistance (TA) needs of RBM identified?
 - 1.3 Is there an overall plan covering the needs and priorities for TA to the RBM?
Provide details.
 - 1.4 Which agencies/donors (in addition to the Norges Bank/IMF) are providing TA to RBM?
 - 1.5 How is TA provision coordinated and managed within the Bank?
2. Assessment of TA provided to RBM
 - 2.1 TA has been provided in the following areas
 - monetary and foreign exchange operations
 - accounting systems

- strategic planning and risk management
- currency management
- macro analysis
- payments
- organizational review

2.3 Has the TA been responsive to the concerns and priorities of the RBM?

2.4 Please describe the RBM's objectives for the TA?

2.5 Has the TA been effective in achieving its objectives? What have the main successes been? In what respect has the TA failed to achieve its objectives?

2.6 What factors have affected its success? How could success have been improved?

2.7 Where there have been difficulties, please describe the factors affecting these. How could these have been mitigated or prevented?

2.8 Does the RBM receive useful and timely reports? How could the reports be improved?

3 Role and Future

3.1 What levels and types of requirements for TA do you anticipate you will need over the next two years? Please provide any relevant planning documents.

3.2 How has the TA contributed to the sharing of other central banks' experience? How could such sharing be made more effective?

3.3 How could the relevance, effectiveness and impact of the TA be improved?

3.4 Please give your views on the approach used in this project, viz., central bank to central bank TA with the IMF providing quality control and technical input?

3.5 In general IMF HQ has interacted with RBM on the TA through the resident advisor. Please give your views on this procedure? In the coming period the advisor will become peripatetic. Are there any changes you would like in view of this change?

3.6 Are there any other comments you would like to make?

Advisor: Issues for discussion

1. Approach

This set of questions aims to cover the core areas of the evaluation framework.

Please feel free to expand on any of the issues identified or to raise any additional issues.

1.1 How are your roles and responsibilities defined? Is there scope for improvement in the role? (E.g. content, level and formality of agreement)

1.2 Work planning

- How do you ensure that beneficiary needs are effectively identified and prioritized?
- How are other TA (both IMF and other) activities taken into account?

1.3 What information do you need to support work planning activities and is it readily available?

1.4 What types of IMF reports are available to you? How could they be improved to provide a stronger basis for planning and evaluating your activities?

1.5 Do you have any comments on your role, status, terms and conditions etc.?

1.6 Please try to estimate the percentage of time you spend on the following activities;

- Provide specialist technical assistance
- Working with short-term experts, offsite and onsite
- Internal (RBM) liaison, processes and systems
- Internal (IMF) liaison, processes and systems
- Internal (Norges Bank) liaison, processes and systems
- Building relations with beneficiary to support future work planning

2. Human Resources

2.1 Have the short-term experts been appropriate for project needs?

2.2 What services and assistance does the RBM support staff provide?
Is this effective and appropriate?

2.3 What are the arrangements for the use of short-term experts?

- How are they identified?
- Are there any improvements that could be made to the process of appointing them?

3. Relations with IMF HQ and other

3.1 Describe how the communication, reporting and working arrangements operate?

- 3.2 What support and feedback do you get from HQ department colleagues in terms of technical/back-stopping assistance?
- Are there any issues with the timelines, quality and applicability of their responses?
- 3.3 Do you ever seek assistance from HQ staff/consultants for specific in-country technical interventions?
- 3.4 How do relations with the Country Resident Representative and AFR missions work?
- 3.5 How do relations with other long-term advisors based in country work? (where applicable)
- 3.6 How do relations with the regional technical assistance center (Afritag East) work?
4. Relations with beneficiaries
- 4.1 What is your understanding of your role and mandate in this area, and your role vs. that of IMF HQ? How are roles and responsibilities divided?
- 4.2 How would you describe the reputation of the IMF TA among the authorities?
- 4.3 Do you think beneficiaries understand your role and that of IMF HQ?
- 4.4 Are there any practical changes to working arrangements that could improve relations?
- 5 Experience and results
- 5.1 Have all activities been in line with the agreed work plan?
- 5.2 Which of your activities have directly supported an agreed/ broader government program?
- 5.4 How does the structure of the project add value?
- Provide examples of how and when delivery from the project has been preferable to more effective than support provided by the usual TA?
- 5.5 Do you have examples of effective follow-up or sustainable implementation of recommendations?
- 5.6 What kinds of TA can be provided most effectively from this structure viz. where most experts are from a single central bank, your own, rather than the usual TA providing experts with different backgrounds?

5.9 Which elements of your overall mandate are most relevant and effective in practice?
Please provide examples for your responses to each element.

- Creating better understanding of beneficiary needs and issues?
- Ability to respond quickly to specific needs?
- Ability to provide continuation/follow-up support on specific issues?
- Providing support in-country consistent with overall reform program of Malawi?
- Undertaking capacity building among beneficiaries?
- Sharing lessons from other central banks?
- Other.... please elaborate

5.10 How would you think the medium-term needs of the RBM will change?

5.11 What are the conditions that affect this central bank twinning TA effectiveness.

To what extent do the following have an impact. Is the impact positive or negative?

- Presence of a long-term resident advisor?
- Existence of a PRSP or other consolidated and agreed reform agenda with the Fund?
- Existence of an IMF program or other projects?
- Supportive/reformist government?
- Capacity of the beneficiary, RBM (staffing, management, role)?
- Support received from the Norges Bank
- Supplementation of TA with study visits
- IMF role
- Other factors?

5.12 Describe the perfect long-term/coordinating advisor-skills, experience, background?

6. Any other suggestions to improve efficiency and effectiveness

IMF Resident Representative and/or Mission Chief – Issues for Discussion

1. Have you been aware of how the TA is functioning?
2. Please provide your views on its effectiveness?
3. Has it acted to support the program/surveillance work?
4. Please make any other points you judge relevant.

PEOPLE SEEN

MINISTRY OF FINANCE

Secretary to the Treasury: Mr. Radson P. Mwadiwa

RESERVE BANK OF MALAWI

Deputy Governor, Mrs. Mary C. Nkosi

General Manager, Dr. Wilson Banda

Economic Services

Executive Director, Economic Services, Mr. Neil Nyirongo

Economic Services – Banking and Payment Systems

Director, Ms. Lenia N. Banda

Supervisor, Policy and Research, Payment Systems, Mr. Charles Mchukulu

Economic Services – Research and Statistics

Director Research and Statistics, Mr. Efford Goneka

Principal Economist, Research and Policy Analysis, Dr. McDonald Mwale

Principal Economist, Financial Services and Public Finance, Mr. Chimwemwe Readson Magalasi

Senior Economist, Research and Policy Analysis, Mr. Kisu Simwaka

Senior Economist, Balance of Payments, Ms. Onelie Nkuna

Economic Services – Treasury Department

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Senior Dealer, Mr. Mushane Mwangonde

Senior Analyst, Middle Office, Mr. Rodrick Wiyo

Analyst, Mr. Franklyn Khoza

Support Services

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Support Services – Accounting and Finance Department

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Back Office Manager, Ms. Violet Chatsika

Management Accountant, Ms. Molly Stambuli

Support Services – Human Resources and Institutional Development

Director, Human Resources and Institutional Development, Mr. Rangford B.A. Chokhotho

Manager, Strategy Performance and Organization Development, Mr. Peter Chando

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IMF

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Advisor, Mr. Jon A. Solheim

Glossary

AFD	Accounting and Finance Department
AFR	IMF's African Department
ALCO	Asset and Liability Committee
ATM	Automated Teller Machine
BAM	Bankers' Association of Malawi
BIS	Bank of International Settlements
BKE	Bilateral Key Exchange
BoT	Bank of Tanzania
BoZ	Bank of Zambia
BPS 100/200/300	Bank Processing System machines, Giesecke&Devrient
BPSD	Banking and Payment Systems Department
BSc	Balanced Scorecard
BSD	Bank Supervision Department
CBS	Central Bank of Swaziland
CMD	Currency Management Department
CPI	Consumer Price Index
CPSD	Currency Management and Protective Services Department
CPSS	Core Principles for Systemically Important Payment Systems
D	Average day's pay
DMX	Data Management in Excel
ECCH	Electronic Cheque Clearing House
ECDM	Exchange Control and Debt Management Department
ECF	Extended Credit Facility
EFT	Electronic Funds Transfer System
ESAF	Eastern and Southern African Forum
ESF	Exogenous Shock Facility
EUR	EURO, currency of the Eurozone
FCD	Foreign Currency Deposit
FP	Financial Programming Model
FSA	The Financial Supervision Authority
FSR	Financial Stability Report
FX	Foreign Exchange
GDP	Gross Domestic Product
GNP	Gross National Product
HRID	Human Resources and Institutional Development Department
HTML	HyperText Markup Language

IAD	Internal Audit Department
IC	Investment Committee
ICT	Information Communication Technology
ICTD	Information and Communication Technology Department
IFMIS	Government's Integrated Financial Management Information System
IFRS	International Financial Reporting Standards
IMF	International Monetary Fund
ISS	Old Giesecke&Devrient banknote processing machine
K	Malawi Kwacha
KRA	Key Result Area
LRR	Liquidity Reserve Requirement
M1	Currency outside banks plus demand deposits
M2	M1 plus quasi-money
Malswitch	Malawi Switch Centre
MIDAS	RBM's Core General Ledger System
MITASS	Malawi Inter-Bank Transfers and Settlement System
MoF	Ministry of Finance
MPC	Monetary Policy Committee
MPIC	Monetary Policy Implementation Committee
NB	Norges Bank (Central Bank of Norway)
NBFI	Non-Bank Financial Institutions Department
NBIM	Norges Bank Investment Management
NDA	Net Domestic Assets
NFA	Net Foreign Assets
NGP	Net Government Position
NPC	National Payment Council
NPS	National Payment System
NSO	National Statistics Office
POS	Point of sale
PRGF	Poverty Reduction and Growth Facility
PSD	National Payment Systems Division
RBM	The Reserve Bank of Malawi
RFP	Request for Proposal
RM	Reserve Money
RMA	Relationship Management Application
RMC	Risk Management Committee
RMD	Risk Management Department; renamed to SRD
RSD	Research and Statistics Department

RSDB	Research and Statistics Database
RTGS	Real Time Gross Settlement System
SADC	Southern African Development Community
SD	Standard deviation
SDMX	Statistical Data and Metadata eXchange standards
SDR	Special Drawing Rights
SICDIAG	Software system for banknote analysis in BPS 1000
SIPS	Systemically important payment systems
Smartcard	Electronic payment card
SRD	Strategy and Risk Management Department
STA	IMF's Statistics Department
T-bills	Treasury Bills
TC	Technical cooperation
TRD	Treasury Department
TT	Telegraphic Transfers/Non-Cash Transactions
USD	United States Dollar
ZAR	South African Rand



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