International Monetary Fund - IMF
Regional Technical Assistance Center
Building Macroeconomic Capacity in East Africa

Workshop on Taking Cash Management Forward

Session 1 – Setting the Scene

Tuesday, February 13th, 2018
Paul Seeds
Stone Town, Zanzibar

Background on Cash Management and TSA

- Significant effort to strengthen cash management practices
- Most countries have at least started on the makings of a core TSA
- Countries at different stages, e.g. Uganda has integrated debt and cash management offices and forecasting daily balances
- Quality issues on cash forecasting, some countries at early stages, ongoing reforms to improve – systems, tools, techniques, training and practices
- Use of check payments a challenge in some countries – electronic payments being extended in many countries now
- Irrespective of all these reforms - cash rationing is prevalent

Workshop Objectives

The workshop aims to:

- Reinforce the key fundamentals for effective cash management;
- Impart knowledge and share experiences to:
  - Improve the quality of cash forecasting;
  - Facilitate extended coverage of the TSA (ultimately to cover all government cash resources); and
  - Assist member governments to move beyond the basics (and cash rationing) to proactive cash management.

Outline of Workshop Sessions

- Session 1 – Setting the Scene
- Session 2 – Recent Cash Management Initiatives in the Region
- Session 3 – Cash Management – What are the Problems?
- Session 4 – Cash Management – How to get it Right
- Session 5 – Reflection on TSA Modalities and Status in Region
- Session 6 – Overcoming the Challenges to a Fully Comprehensive TSA
- Session 7 – Planning for a Comprehensive TSA
- Session 8 – Introduction to Advanced Themes on Cash Management
- Session 9 – Moving Beyond the Basics
- Session 10 – Group Discussions - Priority Actions for each country

Country Presentations

1. Country experiences and cash forecasting practices: how countries are planning to move from cash rationing to more active cash management.
2. Discussion on Status of Countries' TSAs: Modalities; Extending TSA Coverage; planning Implementation where currently there is no TSA.
3. Country Plans for Enhancing Cash Management and Refining Practices over the Medium-Term.

Three Workshop Themes

1. Strengthening cash management practices
2. Moving from a core TSA to a fully comprehensive TSA
3. Taking Cash Management to the next level

Theme A: Strengthening Cash Management Practices

- Presenting an overview and context of cash management in the region;
- Reviewing practices, challenges, recent reform activities and institutional arrangements of member countries
- What are the problems and why do we have forecasting errors?
- How can we learn from these errors? Identifying the underlying causes of the inaccuracies

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Theme A: Strengthening Cash Management Practices

- How can we get it right?
  - Revisiting and refining the forecasting templates
  - Level of granularity required for different entities – focusing on MDAs with material and volatile inflows/outflows
  - Strengthening institutional arrangements and formal/informal engagement
  - Developing the tools, techniques and practices
  - More effective use of available information and systems for better informed forecasts

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Theme B: Moving from a core to full TSA

- Recap on the prerequisites for establishing a core TSA to assist those countries yet to establish a TSA
- Pooling and aggregation of funds – providing fungibility and more effective use of cash funds
- TSA an important contributor to effective cash management
- Background on progress and phased approach to extending coverage
- Use of commercial banks alongside central bank accounts in the core TSA

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Theme B: Moving from a core to full TSA

- Different models:
  - Sub Accounts versus Zero Balancing Accounts (ZBA)
  - Sweeping of balances - - daily for revenues and overnight sweeping of account balances
  - centralized versus decentralized payments: CPO versus MDA payment accounts (cash ceilings, JIT funding or ZBA
- How can the TSA be extended to incorporate all government funds as far as is possible, including planning for bringing DO funds into the TSA

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Theme C: Taking cash management to the next level

- An introduction to more advanced cash management practices
- Laying the foundations for and a phased approach to implementing more advanced practices:
  - Determining an appropriate cash buffer level
  - Rough tuning and fine tuning
  - Discussion on fine tuning instruments
- Required relationships for active cash management

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Theme C: Taking cash management to the next level

- Relationship between cash management and monetary policy
- A phased approach to moving beyond the basics

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In Summary – Importance of good cash management

- Good cash management can enable the government to:-
  - Withstand shocks
  - Save money and avoid arrears
  - Plan efficient budget execution
  - Design efficient budget preparation
  - Aid the operation of monetary policy
  - Increase confidence in the government
  - Produce transparent and corruption-resistant accountability
- Bad cash management can reverse all these

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Workshop Expectations

- Our expectations:
  - Active participation in sessions (2 way experience)
  - Participants can gain an understanding of the challenges and solutions to persistent problems
  - Take back your experiences and **SHARE** with your peers and colleagues to implement improvements
  - Session 10: Wrap up session – summarizing feedback, and countries preparing a high level action plan (3 or 4) immediate activities proposing to implement
- Your expectations:
  - What do you expect to achieve from this session?
  - How will you take these experiences back and implement at your workplace?

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Welcome Cocktail Reception

- Drinks and snacks
- Opportunity to meet counterparts from other countries
- Opportunity to discuss informally
- Create networks of peers in the region
- Ongoing interaction and possible opportunities for undertaking attachments

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Session 2 – Recent Cash Management Interventions

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Outline of Session

- Looking at practices amongst member countries
- Recent cash management reform initiatives
- Highlighting common challenges and barriers to effective cash forecasting and proactive cash management
- Reinforcing the key fundamentals for effective cash forecasting and cash management (overview) ***- to be brought out in more detail in later sessions***
- Flagging gaps and how they can be addressed
- Identifying where lessons can be learned

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Background (1)

- Having cash available at the right time and place is imperative for smooth and effective implementation of the budget
- Accumulation of payment arrears impacts on budget execution and effective cash management – is symptomatic of broader issues in PFM cycle – not cash management *per-se*
- **Eritrea and Zanzibar** yet to implement key cash management reforms. Zanzibar undertook attachment in Uganda to gain better understanding of cash management principles and practice
- **Ethiopia:**
  - Ongoing strengthening of cash management practices
  - Extending TSA to lower levels of subnational government

Background (2)

- **Kenya:**
  - Established a TSA with (automated) just-in-time funding of payment accounts from exchequer
  - Established the Treasury and Cash Management Unit (TCMU) – Operation of CMC needs to be reinvigorated
  - Recently implemented cash management module: automating forecast submissions, consolidation, etc. Currently, only for MDA expenditures – extending to Revenues, Statutory Payment, Public Debt, etc.
- **Malawi:**
  - CMU, CMTC and CMC established and operational
  - Undertaken a number of workshops, study tours, development of forecasting templates, currently implementing electronic payments
  - Core TSA in place with a process of Credit Ceiling Authorities with commercial banks enabling zero balancing

Background (3)

- **Rwanda:**
  - No recent missions on cash management but have a TSA and undertake regular cash forecasting – will hear further during their country presentations
- **Tanzania:**
  - Rationalizing banking arrangements: centralizing funds at BoT and payments through CPO; Daily transfers of revenues; Closing dormant accounts; and quarterly reporting on commercial banks
  - Moving to quarterly budget releases – requires changes to IFMIS
  - Monthly cash forecasting – aiming to improve quality of the forecasts but proactive cash management undermined by significant payment arrears
  - AFE training to develop forecasting skills and techniques

Background (4)

- **Uganda:**
  - TSA established with fairly comprehensive coverage
  - Local governments being brought into the TSA in a phased manner
  - Analysis paper on requirements for bringing DP funds into the TSA; discussions with individual donors to sign up to arrangements; bringing their transactions into IFMIS
  - Cash forecasting model being refined

Countries will share a more detailed account during their individual presentations

Important Consideration

Cash management practices need to reflect the analytical nature of the tasks involved

- Cash management is not about compliance, e.g. merely ensuring forecasts are submitted on time
- Cash forecasting is not focused on procedures and process
- Effective cash forecasting requires in-depth scrutiny of all events impacting the flows of cash to facilitate quality information and reliable forecasts

Budget Release v Cash Release (1)

- It is important to recognize the difference between budget release and cash release
- Budget releases facilitate spending units to commit expenditure
- Cash releases facilitate spending units to pay
- Timing differences between needing to make a commitment and needing to make a payment
- Need timely budget release to enable effective commitment of expenditures and implementation of planned activities in the budget
- Laws facilitating longer time-horizons for budget releases: 3 months to 12 months consistent with monthly cash ceilings over the year

Budget Release v Cash Release (2)

- Some countries release budget on a monthly basis despite laws supporting longer horizons
- Often due to uncertainty on the availability of cash over the next (say) 3 months
- Problem where system ties budget and cash release – e.g. exchequer release in Epicor System (Tanzania, Malawi and Zanzibar)
- If system does not permit committing expenditure at the right time, spending units are encouraged to operate outside the system – useful information for cash forecasting not recorded

The role of cash management is to facilitate implementation of the budget not to control the budget

Institutional Arrangements

- Cash Management Unit – often under the Accountant General
- Need for close collaboration with debt office: where cash management is at a more advanced stage – cash and debt management offices integrated
- Role of a high-level Cash Management Committee
  - Provide high level authority to cash forecasting processes
  - Can require MDAs to report and account for (significantly) inaccurate forecasts
  - Oversees operation of the CMU and requires feedback
- Formal/informal process for engaging MDAs for deep scrutiny and investigation of forecasts

Forecasting Tools and Techniques (1)

- MDAs prepare Annual Cash Plan (ACP) based on budget with profile of expected monthly inflows/outflows
- Cash forecasts updated on (at least) a monthly basis using standard templates
- Different templates for different MDAs depending on:
  - Nature of MDA - major revenue collector or spending agency
  - Materiality of inflows/outflows
  - Volatility of inflows/outflows
  - Focus more on volatile and materiality – determine the granularity of detailed contained in the templates

Forecasting Tools and Techniques (2)

- Cash forecasting does not entail an accounting-level of precision but forecasts need to be reasonably accurate and reliable
- Analyzing forecasting errors is a vital part of the process for continuous improvement in the quality of forecasts
- Engagement between CMU and MDAs a key imperative
- Making MDAs accountable for the quality of their forecasts
- Informal relationships within MDAs between the forecasters and spending units/officers
- They have up to date information on progress on workplan activities, projects, contracts, procurement activities, etc.

Forecasting Tools and Techniques (3)

- Use of data on contracts, projects, planned procurement, work/activity plans
- Variance analysis a critical process in improving the quality of forecasts – identifying the cause if errors and correcting them to avoid in future
- Ongoing refinement of templates, granularity etc., based on experience and needs for improved quality
- Walk before you run – prioritize improving the quality of forecasts over higher frequency (daily forecasts)
- Incentivize MDAs to provide quality forecasts, plus training and sanctions
- Importance of timely releases (cash ceilings) before start of month, ultimately required cash releases predictable in accordance with plans

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Systems Support to cash management

- IFMIS module versus Excel worksheet
- Cash forecasting is analytical in nature - need a tool to support analysis – Differs from transaction processing
- However it is important to maintain a history of previous forecasts
- Examples of systems:
  - Oracle EBS cash management module
  - Oracle Hyperion
  - Epicor – Isidore
  - Standalone Excel worksheets
- Even with IFMIS modules, the templates are still worksheet based supporting modelling and analysis

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Systems Support to cash management

- Facilitate preparation and consolidation of forecasts using templates with different levels of granularity
- Supports presentation of forecast errors – but analysis and deeper scrutiny comes from engagement with forecasters in MDAs
- Electronic payments a key element of system support – cash forecasting and management far more challenging where there are large volumes and values of outstanding checks
- Effective cash management demands accurate figures (balances and transactions) – timely bank reconciliation is vital but many systems fall short in providing the required level of support
- Issues with banking data from Central Banks and with configuration of the bank reconciliation functionality
- Interface with Central Bank useful – up to date reliable information

Use of Information in IFMIS

- Only useful in IFMIS is fully comprehensive, covering all bank accounts
- Historic information useful for identifying trends and seasonality (especially revenues) and identifying smooth and uneven expenditures
- However, past information expenditure information not a predictor for future expenditures
- Can use information from procurement plans and work plans but these are not often updated and consequently information contained therein not reliable enough for cash forecasting

Use of Information in IFMIS

- Use of commitment information in IFMIS:
  - Could provide profiles (timing) on future outlays from commitments incurred
  - Can commit contracts, projects and large procurement in IFMIS
  - When recording a commitment, system provides for anticipated order fulfilment dates and payment dates – this data can help inform forecasts
- **However:**
  - Few countries commit **all** expenditures comprehensively
  - Mainly only commit LPOs and many LPOs outside system
  - Fulfilment dates rarely reliable – often default 30 days
- IFMIS information needs to be supplemented with up to date information obtained from discussions with spending unit

Country Practices (1)

- Often undertaken largely as a compliance exercise rather than a qualitative and analytical process
- Annual plan often merely dividing the annual budget by 12
- Repeat submissions (same data each month) achieves compliance but data not up to date and not reliable
- MDA mindset:
  - When arbitrary cuts are made to budgets MDAs unable to operate within new constraints without a fundamental downsizing of operations
  - Viewed as an impossible situation: "we don't have enough money" so MDAs feel powerless to find a meaningful solution

Country Practices (2)

- Several countries have accumulated significant payment arrears, which entrenches cash rationing practices rather than proactive cash management
- Robust variance analysis not undertaken – no deep scrutiny as to the causes of variance and unexpected cash shocks
- Limited follow up and engagement with forecasters to the establish causes of the errors and avoid in future – understand the implications of poor forecasts
- Many countries only just starting out on new cash management reforms and have a long way still to go
- Good cash management takes several years

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Engagement

- Engagement between CMU and MDAs and within MDAs - forecasters and spending officials is vital
- Do large MDAs merely submit forecasts? Do you have a regular forum/Meeting with the large MDAs?
- Does the CMC hole you responsible for large forecast errors? Does CMC require MDAs to account for their large errors?
- Do MDAs engage internally with officers responsible for spending – officers managing large contracts, projects and procurement?
- Do MDAs get feedback on status of projects – delayed, ahead of schedule, contract variations, etc.?
- Engagement with Central Bank on planned T-Bill Auctions

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Cash Management - Performance

- Is cash management working well in your country?
- Active cash management or cash rationing?
- What aspects do you think are working well?
- Are cash forecasts reliable or do you experience unexpected cash shocks?
- What are your challenges?
- What needs to happen to make cash forecasts more reliable?
- Do you identify where forecasts have gone wrong? How?

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Session 3 Cash Management – What are the problems?

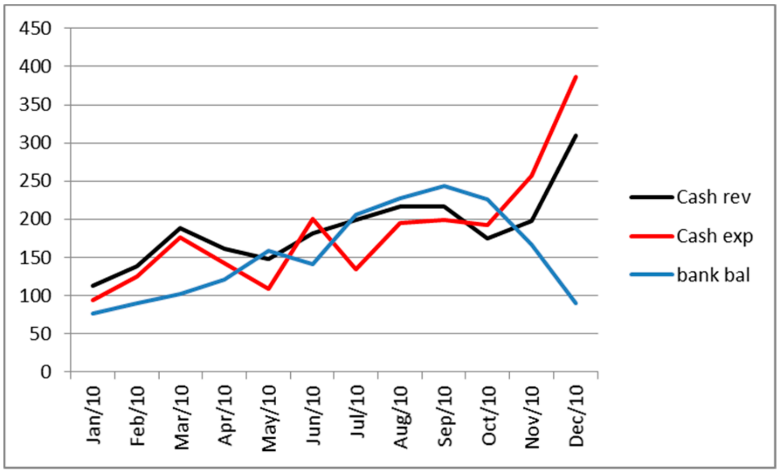
Tuesday, February 13th, 2018
Per-Olof Jönsson
Stone Town, Zanzibar

Cash Management - Overview

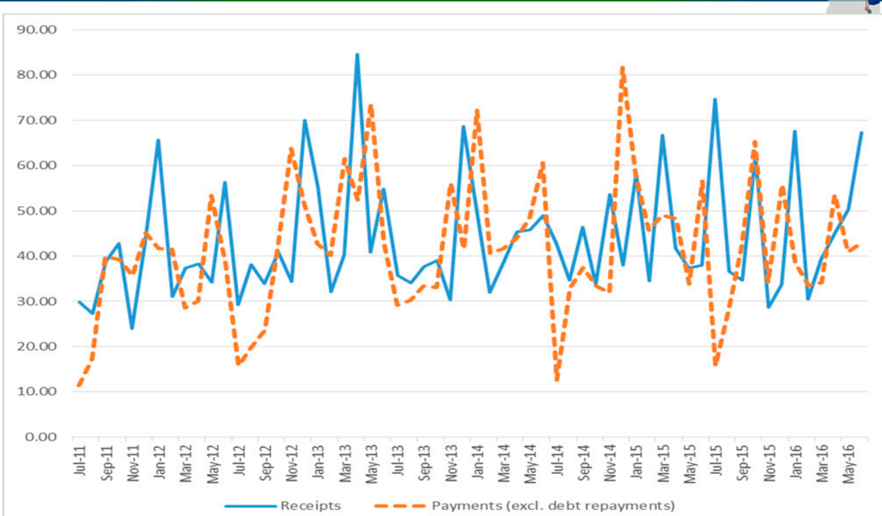
- Task: Government cash management should ensure that funds are available in a predictable and smooth manner for government operations to enable effective and efficient service delivery. This requires:
  1. Cash flow forecasting and planning
  2. Integrated cash and debt management
  3. Active liquidity management
  4. Efficient banking and payment arrangements

- Main objective: Minimize costs within a prudent risk level

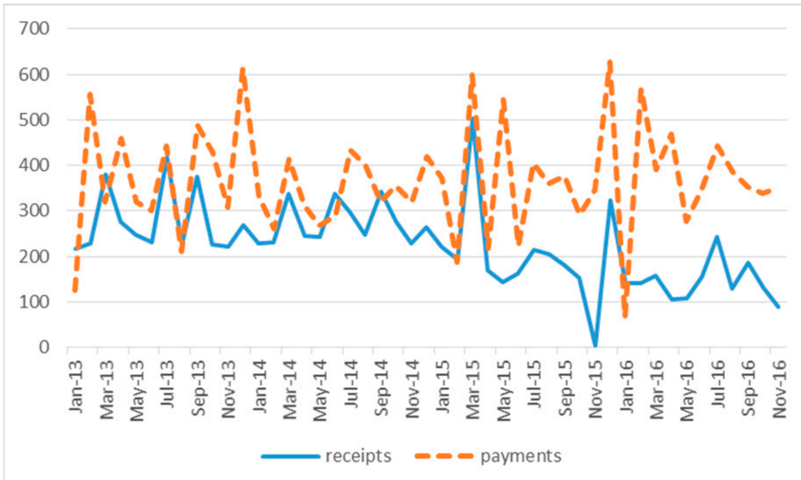
What are the experiences? Country 1



Country 2



Country 3



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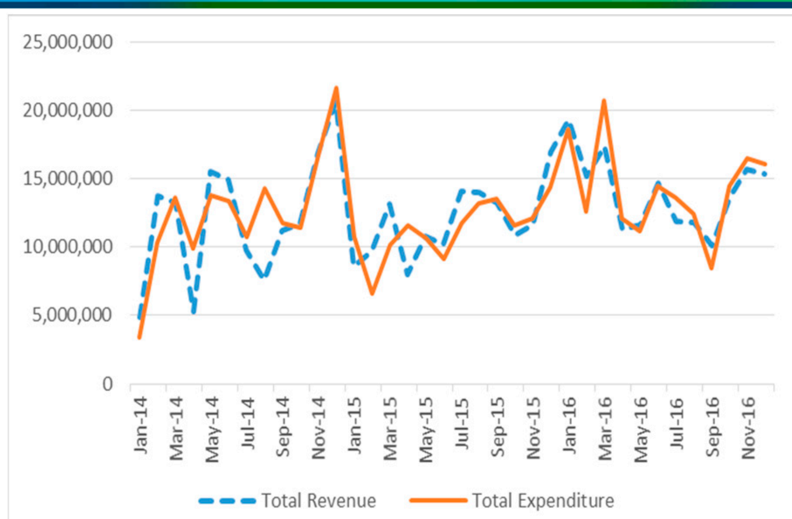
Country 4



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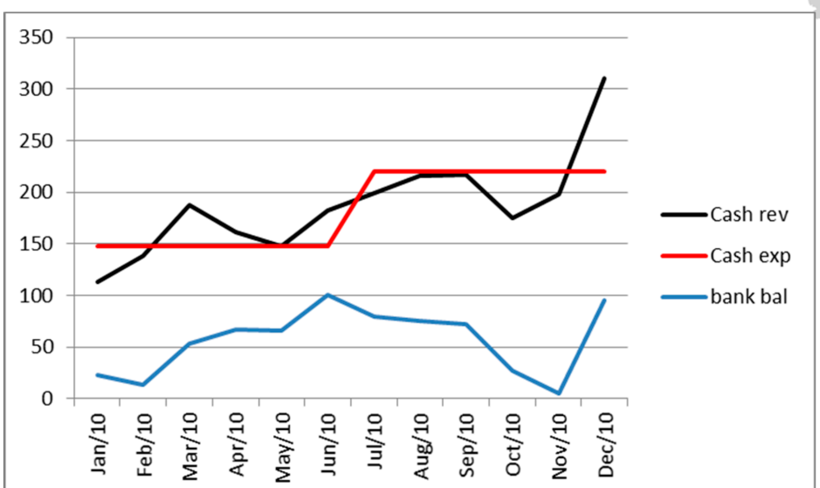
Issues

- Expenditures are very volatile and generally linked to the revenues, indicating that the Cash Management process is not working effectively, creating serious planning and execution problems for line ministries
- Why?
- Budget fund releases mainly based on available cash balances complemented with very short term cash flow forecasts
- The cash balances are low
- Financial instruments, other than bank balances, are not used to overcome temporary cash shortfalls

The expenditures could have been planned and executed in the following way instead



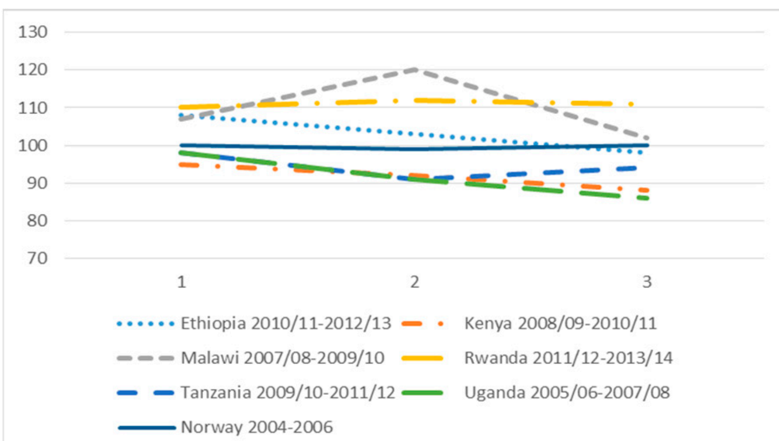
The expenditures could have been planned and executed in the following way instead, cont…

- Treasury would have provided better services to the line ministries
- Line ministries would have been in better position to provide good services to the public

- Requirements:
- Good cash flow forecasts
- Use of financial instruments to modify and smooth the aggregate cash inflows

Context of Cash Management - Budget

- PEFA assessment of aggregate expenditures vs original Budget, %

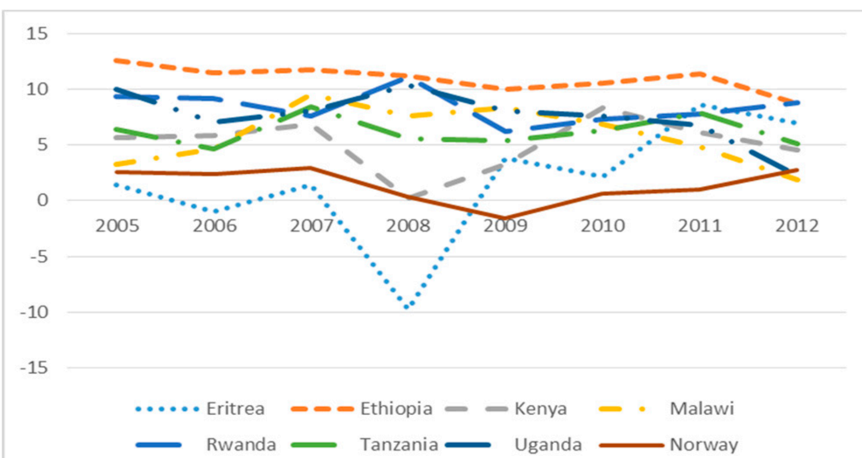


Context of Cash Management- Budget

- The volatility of the expenditures indicates that also in the Budget there is a strong link between revenues and expenditures
- Borrowing is not conducted in order to ensure that the Budget can be implemented in case of a revenue shortfall and vice versa, i.e. if the revenues turn out to be higher a supplementary Budget is issued and the expenditures are increased
- Compare with Norway where the authorities stick to the Budget

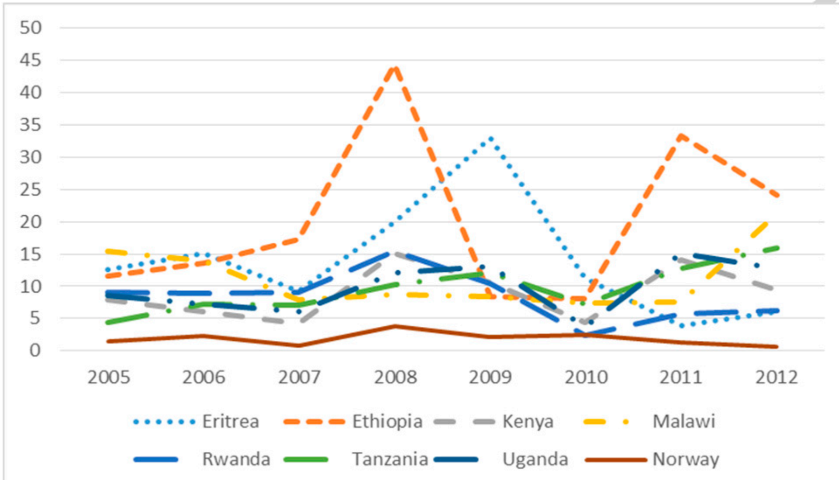
Context of Cash Management - Macro

GDP, constant prices, %



Context of Cash Management - Macro

Inflation, CPI, %



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Context of Cash Management - Macro

- The volatile macro situation creates forecasting problems for revenues (and also some expenditures)
- This in turn creates problems for the Budget reinforcing the tendency to use the revenues that are collected

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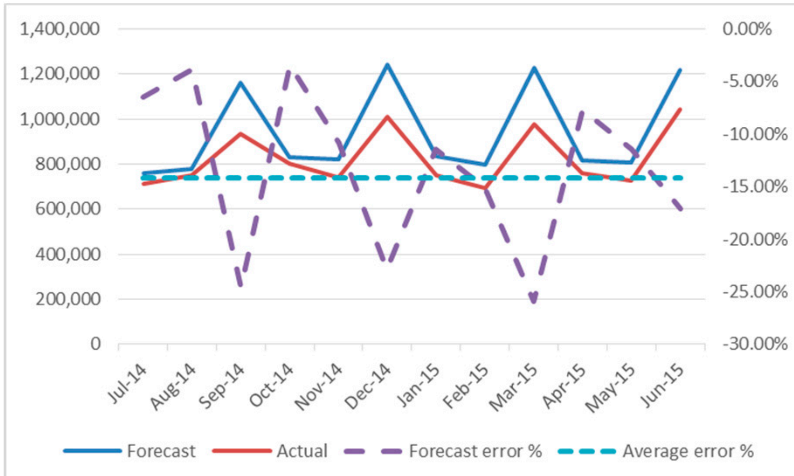
What do we get from the Revenue department / authority? Country 1



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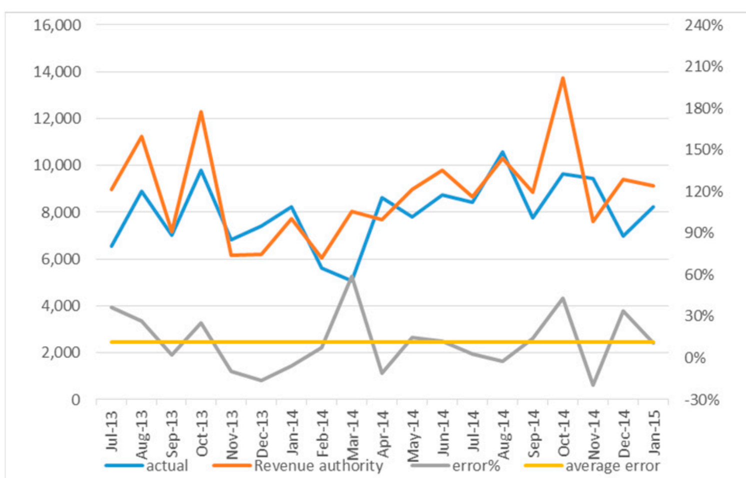
What do we get from the Revenue department / authority? Country 2



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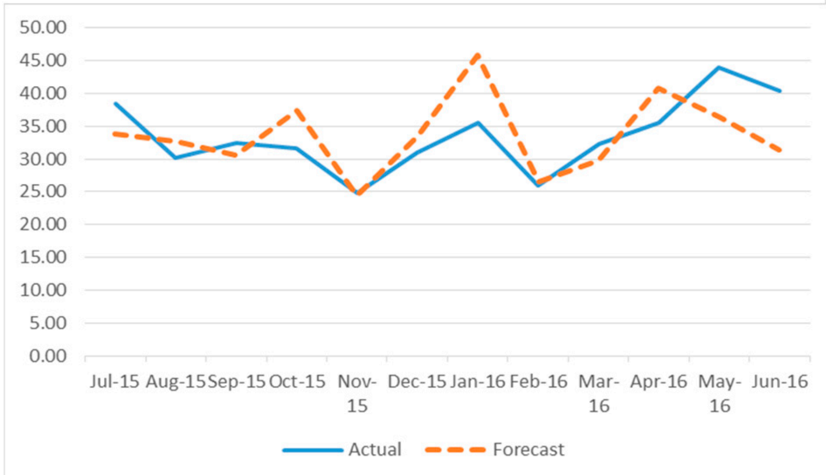
What do we get from the Revenue department / authority? Country 3



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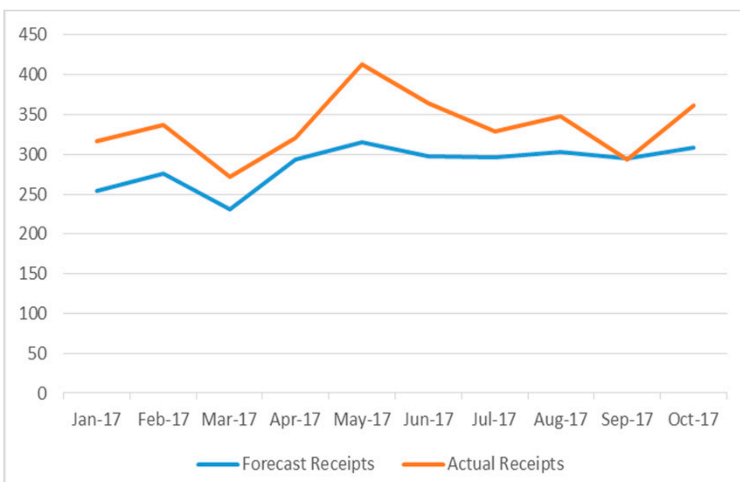
What do we get from the Revenue department / authority? Country 4



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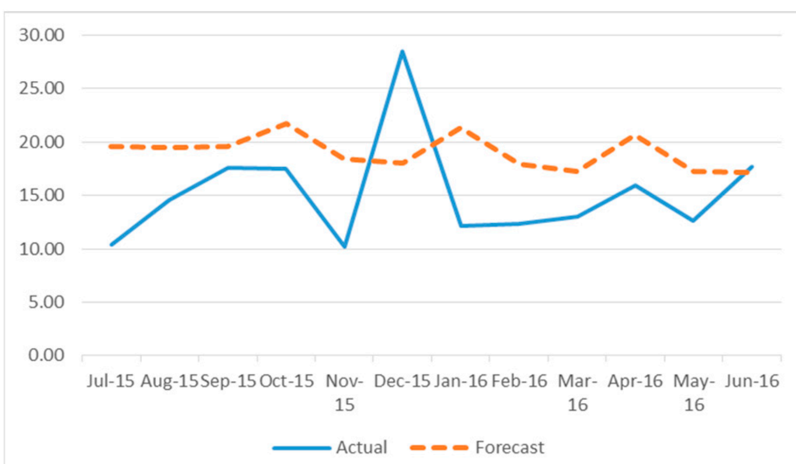
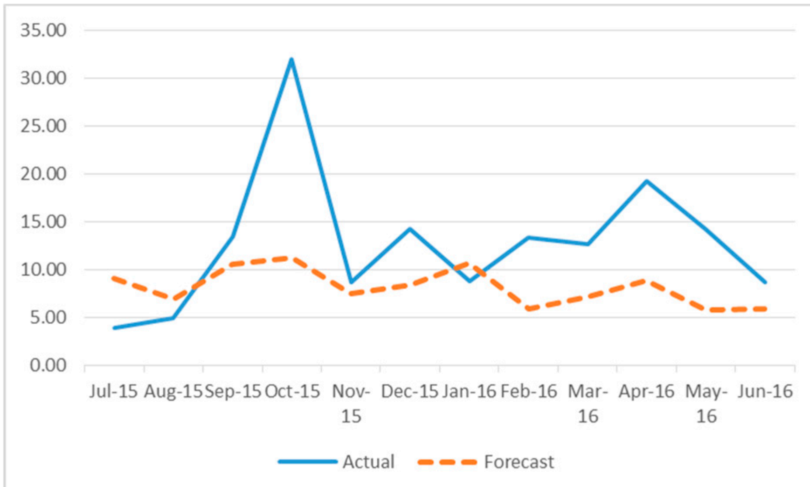
Macro-Fiscal forecasting is difficult…

- If the Macro situation is volatile
- But maybe too little emphasis is devoted to analysis of the actual tax collection, which is an important indicator of the Macro situation
- Sometimes, the Budget numbers seem prudent, but a closer look reveals that the collection the current year often is overestimated in case even a modest growth in the Budget numbers may be impossible to achieve
- There is also a tendency to avoid conducting more realistic internal revenue forecasts within the year due to the practice of establishing revenue targets for the tax authority

What do we get from the MDAs? Salaries. Country 1



What do we get from the MDAs? Goods and services. Country 1



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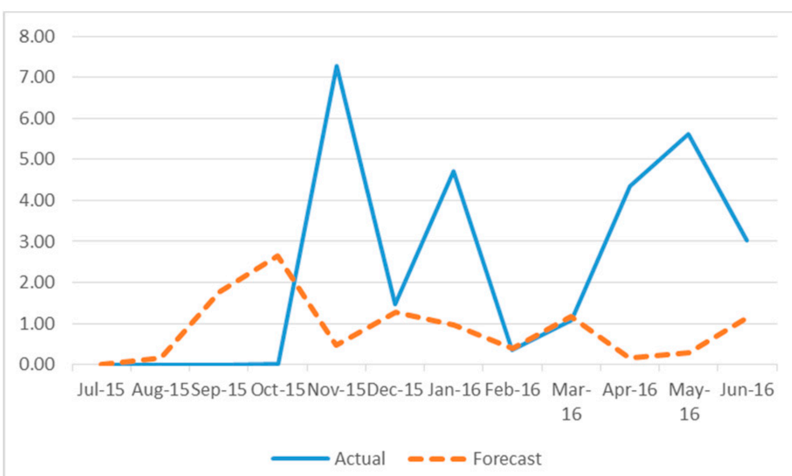
What do we get from the MDAs? Capital expenditures. Country 1



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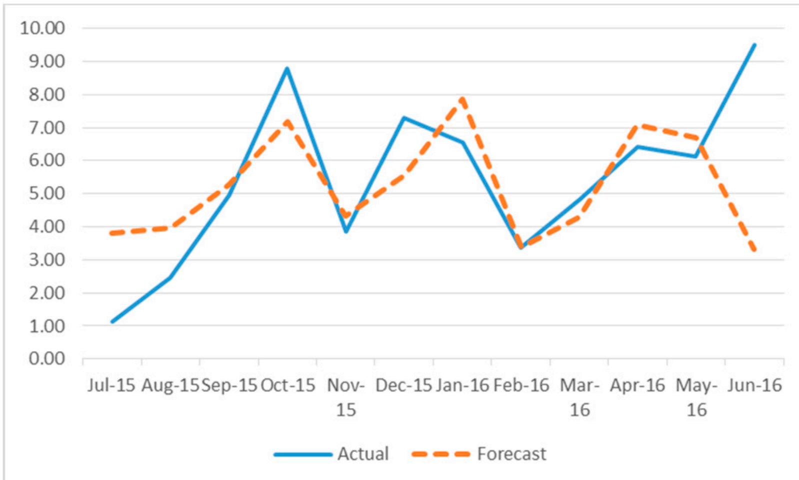
What do we get from the MDAs? Transfers (grants). Country 1



Forecasting the expenditures by the MDAs is difficult due to

- The cash rationing practices making it unclear how much funds they will actually get
- In addition the Budget is often revised in the supplementary Budgets
- If the MDAs put in a lot of effort making realistic expenditure plans based on the Budget they are still not rewarded
- As a result the quality of the forecasting is often low in form of 1/12 of the Budget allocation
- The Budget/CMU often do not provide much feedback on the forecasts either leading to continued poor forecasting quality

Domestic short term borrowing not linked with the underlying cash flows

- T-bills issuing could be used for modifying and smoothing the aggregate cash inflows if the borrowing increases in months with lower revenues than average and vice versa decreases in month with higher revenues than average within the borrowing target for the year
- This is how T-bills are used in developed countries
- But, in developing countries T-bills are almost always just rolled-over, i.e. the maturing amounts are refinanced, see figure
- Thus, T-bill issuing is not linked to the underlying cash inflows and will not provide any effective tool for ensuring that the expenditures can be executed in a stable and predictable manner

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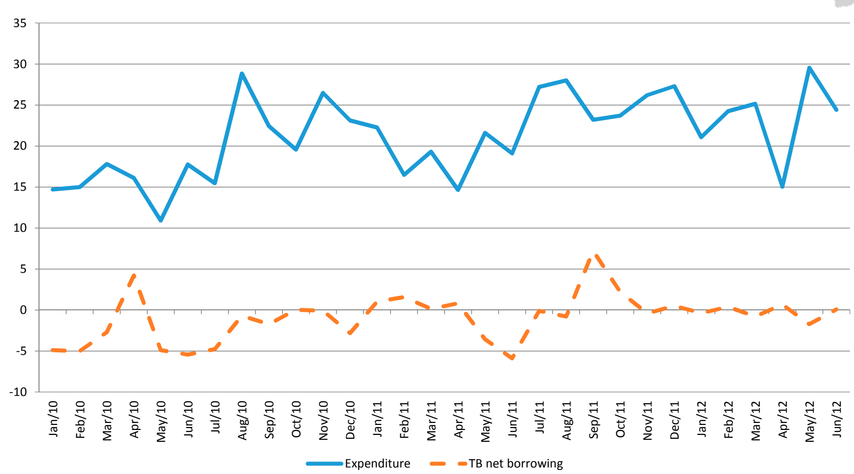
Use of financial instruments to modify and smooth the cash inflows. Country 1



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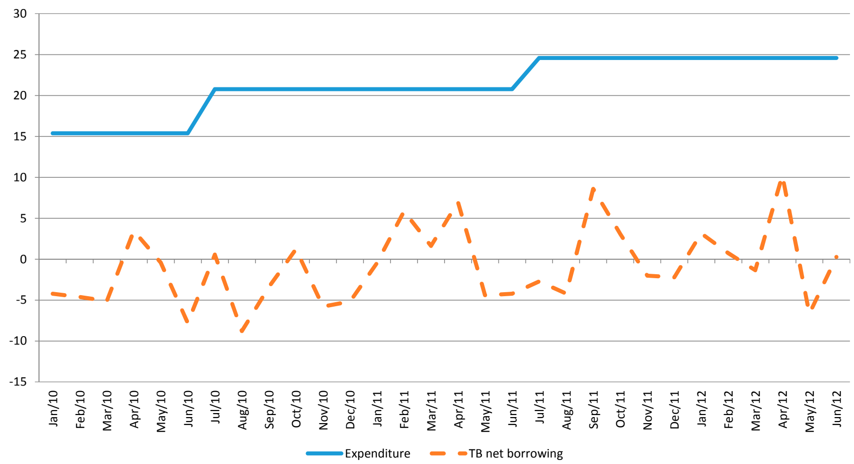
Hypothetical borrowing operations; same total borrowing but deliberately calibrated with the underlying cash inflows



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Typical Cash Flow Forecasting Practices

- MDAs submit monthly or quarterly cash plans to CMU or Budget for full year
- CMU produces an annual cash plan on monthly basis but it is not updated during the course of the year
- Instead the CMU produces a monthly cash plan to the Cash Management Committee with revenues, expenditures and borrowing and with a focus on the main expenditures items to be discussed during the meeting
- Cash Management Committee decides on monthly release of budget funds for major headings
- Borrowing planning is mainly an issue for the Central Bank

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Issues

- Often a CMU has been established but it has not found relevant focus on its operations and is more compiling budget execution information than conducting cash flow forecasts
- The CMUs are merely compiling information produced by other entities and are not prepared to forecasts the cash flows itself
- Sometimes the cash plan is more a budget execution plan than a cash plan, with data not on a cash basis and no overall reconciliation with the bank account balances
- Sometimes it is not clear whether the MDAs should forecast on commitment or payment basis
- Outstanding commitments not regularly reported

Issues

- The current procedures of releasing funds on monthly basis creates planning problems for the MDAs, especially since they do not receive any longer term, updated and realistic, planning assumptions from Budget.
- It is critical for an orderly and efficient execution of the expenditures that the MDAs get funds on a quarterly instead of monthly basis. Thus, the fund releases will be larger enabling more efficient planning by the MDAs.
- Based on monthly cash flow forecasts for the full year it should be possible for the Cash Management Committee to release funds on a quarterly basis
- When credible quarterly fund releases have been established it should be possible for the cash flow forecasting team to request and get high quality cash flow forecasts from major MDAs (not all) since the cash flow forecasts will be decoupled from the Budget release issue
- How to improve the cash flow forecasting? Next session

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Workshop: Taking Cash Management Forward

Session 4 – How to get it right

Tuesday, February 13th, 2018
Per-Olof Jönsson
Stone Town, Zanzibar

Cash Management - Overview

- Task: Government cash management should ensure that funds are available in a predictable and smooth manner for government operations to enable effective and efficient service delivery. This requires:
  1. Cash flow forecasting and planning
  2. Integrated cash and debt management
  3. Active liquidity management
  4. Efficient banking and payment arrangements

- Main objective: Minimize costs within a prudent risk level

Cash flow forecasting – two approaches

- Compilation approach; the traditional approach. CMU compiles information from the revenue department/authority for revenues and from MDAs for expenditures
- Experience approach; CMU makes own forecasts based on historical time series analysis and is prepared to deviate from the Revenue Department/Authority revenue forecasts. Expenditure forecasts complemented with information from a few MDAs.

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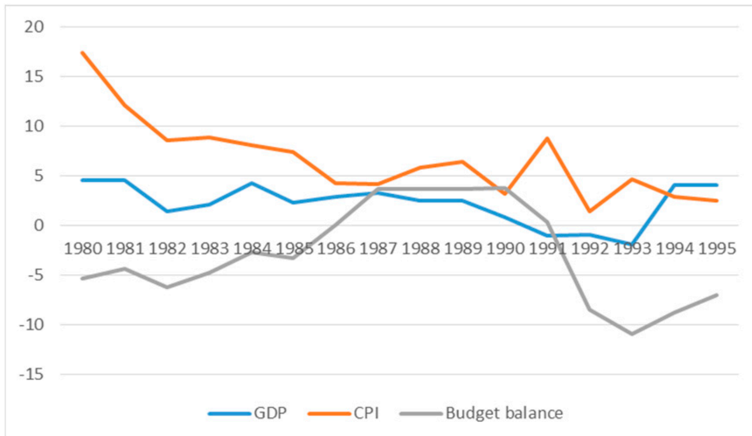
Cash flow forecasting – compilation approach

- Favored approach by PFM consultants
- But not without problems for a typical development country, with macro volatility and low stability in the Budget.
- The revenues are estimated with a focus on the Budget and to serve as a performance target for the revenue authority. Thus, the monthly breakdown of the Budget estimates are not revised frequently (mainly when there is a supplementary Budget)
- MDAs typically do not devote too much resources into the exercise; when they do they are not rewarded. Getting relevant information from MDAs is easier said then done in a cash rationing environment.
- Time consuming for the CMU to provide feedback on the forecasts and analyze the forecasting errors. Without feedback the MDAs will not care much of the forecasts. May require a carrot and stick approach

Cash flow forecasting – experience approach

- Used in some developing countries, but mainly for expenditures and not very sophisticated
- Using historical time series
- Complemented with informal information from a small network of major MDAs
- Sometimes complemented with dedicated cash flow models based on assumptions on GDP, inflation, consumption, aggregate wages and salaries, taxation rules

Experience approach – the case of Sweden



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Experience approach – the case of Sweden

- In the eighties the Macro and Budget situation were very volatile
- The Debt Office made cash flow forecasts two months ahead, basically for Central Bank liquidity analysis purposes
- The borrowing planning was based on the Budget and was sometimes problematic due to weak quality of fiscal forecasts
- The Debt Office decided to plan the borrowing on own estimates of the cash flows based on historical time series analysis
- The simple models used turned out to be much more accurate than the MoF estimates
- Later on the Debt Office´s forecasting techniques became more sophisticated; the forecasts were made public and became the most widely used forecasts of the Government´s budget deficit

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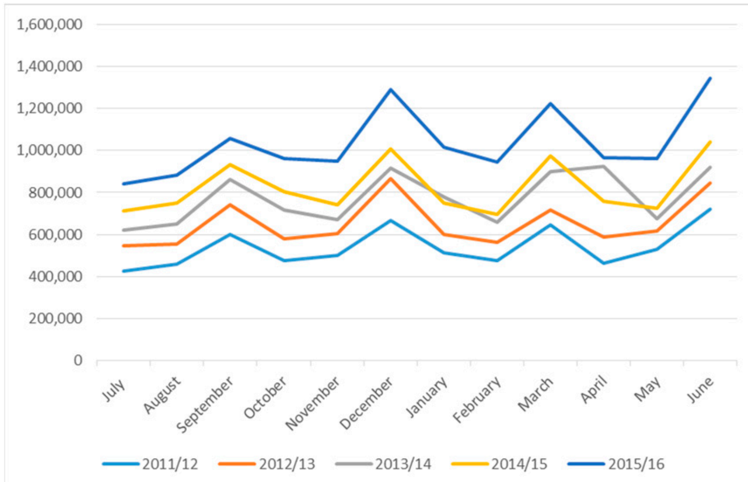
Rationale for experience approach: Tax revenues often follow a stable pattern. Country 1



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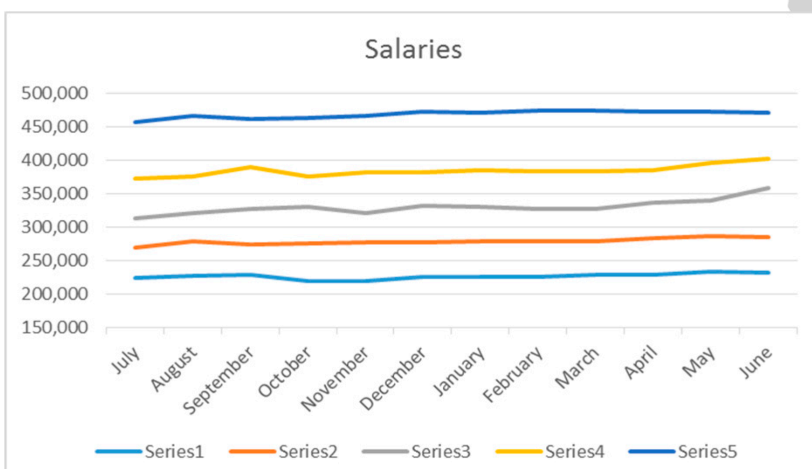
So do many non-discretionary expenditures. Country 1



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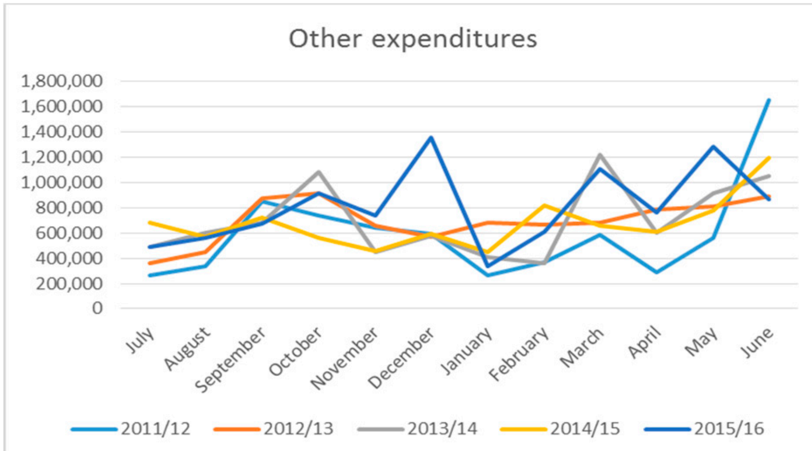
Other expenditures are more volatile. Country 1



Conclusions

- Stable pattern of tax revenues and salaries (non-discretionary expenditures). Even in countries plagued with civil unrest and/or major diseases the tax pattern is typically quite stable
- Relatively low stability in discretionary expenditures (not surprising considering the short term cash rationing practices)
- Thus, the ambition for CMU should be to forecasts the revenues and the non-discretionary expenditures and thereby calculate the space for discretionary expenditures allowing budget funds to be released on at least a quarterly basis

Revenue forecasting

- Since the revenues set the limit for the expenditures forecasting the revenues is key for the Cash Management process
- In addition the bulk of the expenditures typically follows either a stable and predictable pattern within the budget limits or are subject to discretionary decisions
- Typically annual revenue forecasts are prepared by the Revenue/Macro department for the Budget and revised Budget
- Annual taxes are generally forecasted as part of overall macro-fiscal forecasts. Complicated tax regimes sometimes requires more sophisticated models
- Ensure that the revenue forecasts are cautious estimates, not wishful thinking. Conservative revenue estimates is a basic prerequisite for efficient budget execution

Revenue forecasting

- Our focus is the monthly breakdown of the revenues, within-the-year forecasts
- Sometimes the tax or custom authorities might be producing monthly revenue forecasts for the purpose of monitoring its collection targets or by request by the MoF
- However, performance targets not revised frequently
- Alternatively, the cash management unit has to do this

Revenue forecasting

- Types of revenues: taxes and non-taxes, regular and irregular pattern
- Revenues with fairly regular monthly pattern normally constitutes the bulk of government revenues
- Regular revenues: Income tax, VAT, Import VAT and customs, excises
- Irregular revenues: non tax revenues, donor funds
- Regular revenues can be forecasted on monthly basis using historical pattern
- Irregular revenues need to be forecasted on monthly basis by the departments directly involved. However, large irregular revenues could become smaller regular revenues with new regulations
- Consider changes in legislation affecting the payment pattern.

Revenue forecasting

- Some issues typically involved:
- Cash vs accrual accounting. We are focused on the cash aspect, i.e. when the revenue impact the Government bank accounts
- Bank statements vs accounting system information. Pragmatic approach
- Knowledge of tax collection system/procedures
- Forecast cash flows according to a format where the actuals can be identified quickly, not necessarily according to Budget
- Monthly collection pattern, stability?

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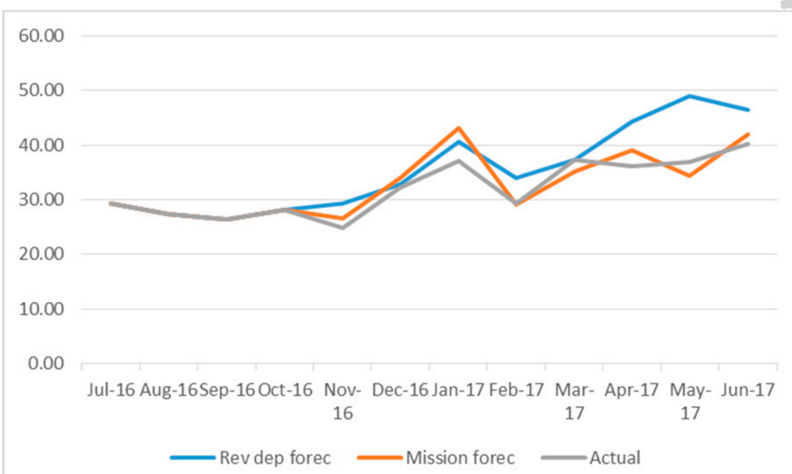
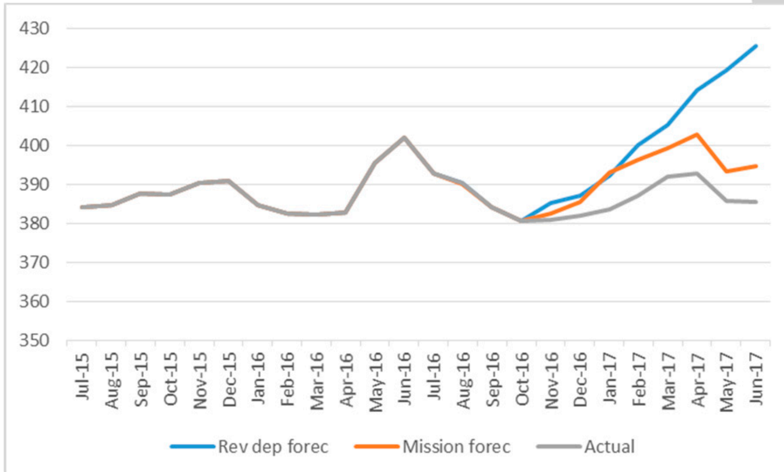
A simple model

- Example of a simple forecasting model based on historical analysis
- The monthly forecasts are based on 3 year monthly averages plus a factor ensuring that the resulting forecasts for the full year is equal to the budget (in the beginning of the year) or meets any other target set up for the year.
- In the following example the revenue estimate for the full year has been adjusted downwards compared with the Budget based on actual growth experiences

Tax Revenue: Example of the simple forecasting model compared with Revenue dep forecasts and actuals



Accumulated comparison



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Doing the calculations in Excel…

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Conclusions

- Monthly cash flow forecasting errors can be due to seasonality factors but are quite often also due to incorrect assumptions for the full year
- Thus, even a simple model can be more accurate than a sophisticated model if the latter does not incorporate the latest information on the actuals
- However, remember: Historical time series analysis cannot follow a rigid model. History is only relevant if it reflects the current procedures/practices. Thus, a shorter period of time than 3 years may be necessary
- Time series with a few outliers not reflecting the current procedures may also be modified

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Cash flow forecasting

- Lessons learned
- Comparing 12 months outcome with Budget
- When should you consider deviating from Budget?
- Fiscal forecasting depends on quality of macro forecasts
- In an unstable environment the actual tax collection provides valuable information
- The revenue patterns could almost everywhere and in all times be used for forecasting purposes within the year
- The same is often true for non-discretionary payments like salaries
- Debt service forecasts should be retrieved directly from a debt management system
- However, discretionary expenditures are often highly influenced by availability of cash rather than due dates. Therefore, expenditure patterns are weak and are difficult to utilize for forecasting purposes.

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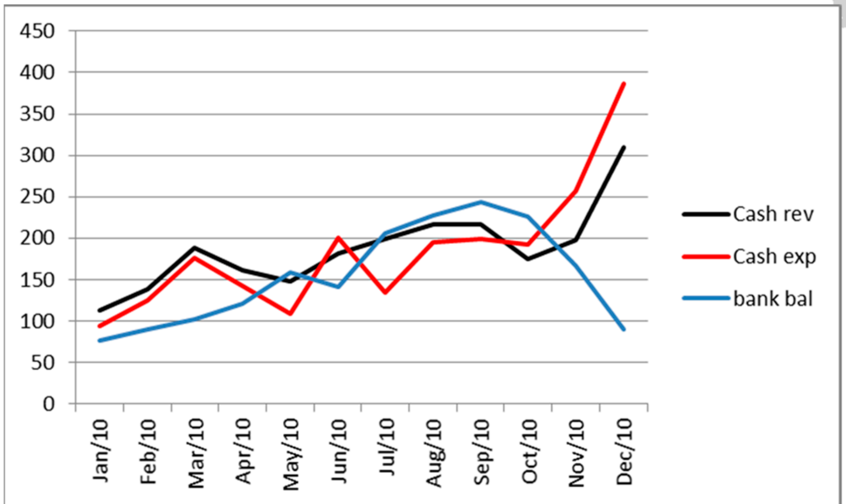
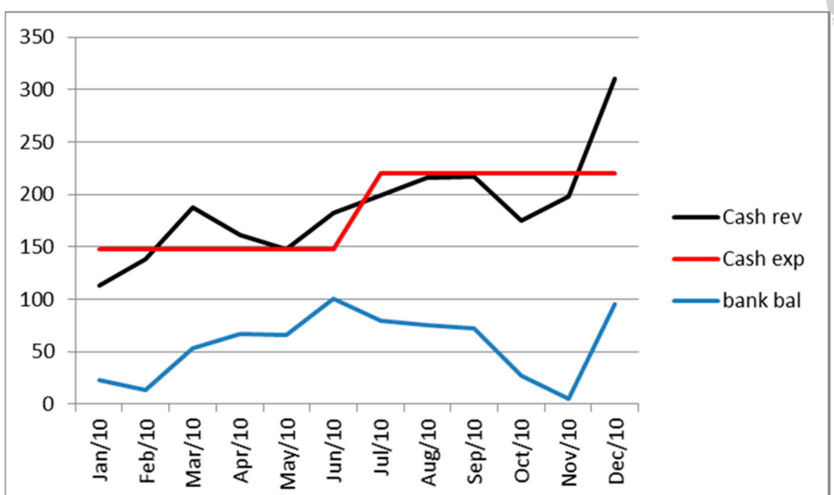
Integrate Debt and Cash Management: Budget execution not supported by adequate cash planning



The expenditures could have been planned and executed in the following way instead



Active use of cash buffer

- Benefits
- Would have provided better planning and operational possibilities for line ministries
- This would have improved line ministries' prioritization of scarce resources and reduced wasteful expenditure
- However, would have resulted in a too small cash buffer

Sufficient and flexible financial resources

- Two options
- Large cash buffers guided by explicit cash targets
- Issue special borrowing instruments for cash management purposes, e.g. Treasury Bills

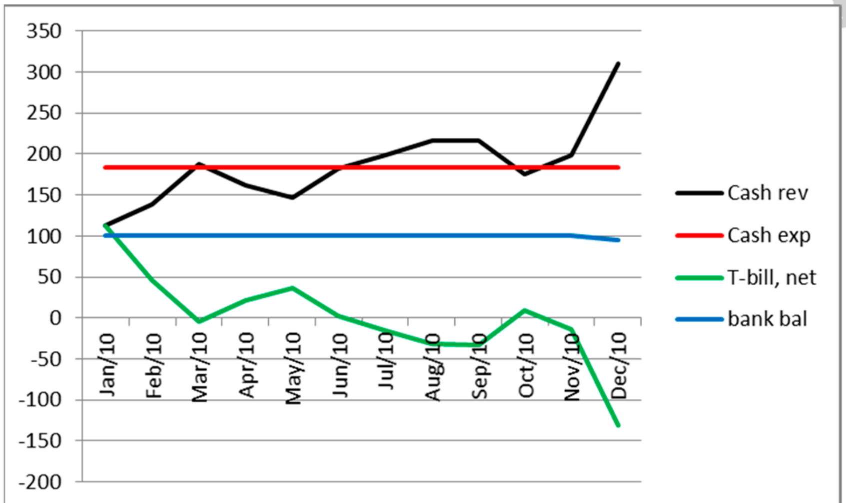
Large Cash Buffer

- Easy in theory, but
- Difficult in practice to maintain adequate cash buffers at the expense of not executing budgeted expenditures
- Expensive to maintain a cash buffer with borrowed funds

Treasury bills

- Treasury bills (T-bills) could be issued for cash management purposes reducing the need for large cash buffers
- Cost effective, but market may not be developed
- The market may also favor if the T-bills are just rolled over, i.e. the maturing amounts are paid for by the new issue, but such as solution provides few benefits for the government
- Start cautiously, modify the T-bill issuance gradually

Example: Budget execution supported by T-bills



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Treasury bills

- Would have made it possible to execute the Budget smooth and predictable
- Would have allowed keeping the cash buffer on an adequate level to handle the risks of forecasting errors

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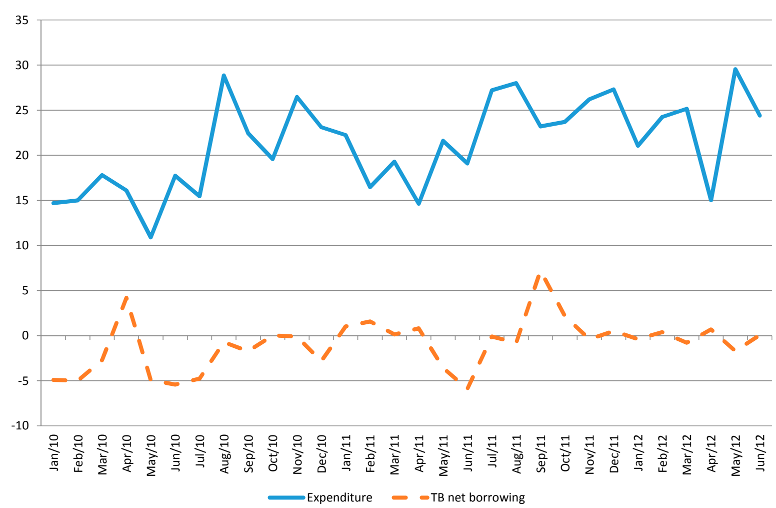
Previous example real but extreme, but generally

- Domestic borrowing in form of T-bills in many countries not used for cash management purposes but follows a passive approach of rolling over maturing T-bills
- By calibrating domestic borrowing to cash flow needs within the borrowing limits domestic borrowing could be utilized as an important tool for providing stable and predictable fund releases to the line ministries.

Country example: Expenditure pattern based on actual borrowing operations



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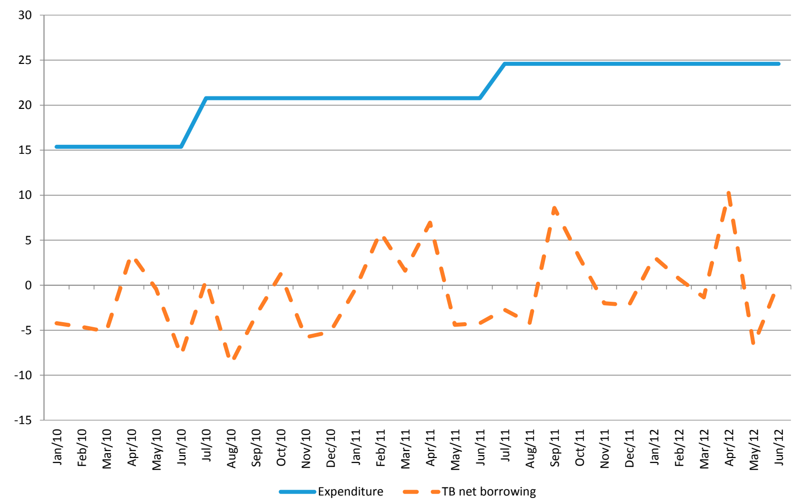
Country example: Hypothetical expenditure pattern based on borrowing operations focused on smoothing the expenditures



Conclusions

- Only a hypothetical example, in reality it is difficult to distinguish between short and long term cash shortfalls
- However, it should be possible to identify months with lower than average revenues and vice versa and adjust the T-bill borrowing accordingly.
- Thus, increasing the T-bill issuance in months with lower than average revenues and pay back T-bills in months with higher than average revenues within the same total amount of T-bill issuance for the year.

Our work so far

- Cash flow forecasting techniques for revenues and non-discretionary expenditures
- Use of T-bills, or other financial instrument, to smooth or modify the cash inflows on monthly basis during the course of the year
- Importance of providing stable and predictable funds to the line ministries
- A comprehensive and realistic cash and borrowing plan on monthly basis for the full year will provide MoF with a tool for informed decision making on budget fund releases and borrowing

Cash and Borrowing Plan

- A comprehensive and realistic Cash and Borrowing Plan should be developed, including:
  - Cautiously estimated revenues.
  - Domestic financing calibrated in order to achieve a smooth expenditure profile maintaining a buffer within the annual borrowing limit.
  - Actual and projected cash positions, including a safety buffer.
- The Cash and Borrowing Plan should be regularly updated
- The Cash and Borrowing Plan should be used to guide decisions on budget fund releases and for domestic borrowing

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Cash and Borrowing Plan

- In order to serve as a budget execution tool the cash and borrowing plan should focus on the Government core bank accounts and not on the Budget. The cash plan is not a budget execution report but a tool for effective budget and borrowing execution.
- Payment of arrears and redemptions of loans should be included
- Revenues and expenditures should be reconciled with cash balances and the cash discrepancies be identified
- If the cash discrepancies are significant it indicates that some items are incorrectly reported as cash flows and/or there are missing cash flows.

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Cash Plan and Borrowing Plan - Example

	Jul-16	Aug-16	Sep-16	Oct-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Sum	Budget
Tax Revenues	29.28	27.64	26.45	25.43	32.83	40.58	33.89	37.38	44.33	49.05	46.54	422.80	431.68
Grants	2.67	0.00	3.02	0.00	0.00	0.00	0.00	0.00	5.00	7.25	12.32	30.26	30.26
Other non-tax revenues	3.10	3.71	3.80	1.65	16.06	10.41	10.85	9.28	9.26	8.42	18.80	98.54	98.26
Other	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	2.00
Total	**35.05**	**31.35**	**33.26**	**27.08**	**48.89**	**50.99**	**46.74**	**46.66**	**58.58**	**64.73**	**77.66**	**553.60**	**562.20**
Compensation of employees	16.71	11.91	15.98	15.74	19.91	23.72	19.88	19.97	24.51	19.87	20.33	230.50	283.74
Use of goods and services	4.86	2.27	7.85	4.61	9.89	12.41	7.02	5.63	9.36	5.02	6.12	88.36	209.30
Consumption of fixed capital	0.00	0.00	0.01	0.01	0.36	0.76	0.14	0.04	0.04	0.02	0.03	5.71	9.18
Grants	3.64	2.36	5.32	1.88	6.44	11.72	10.73	6.01	6.25	8.76	4.69	79.79	88.66
Interest and other charges	0.38	0.49	1.29	0.74	0.00	0.51	2.58	0.00	0.00	0.00	0.00	5.98	8.00
PSIP	0.00	0.00	0.00	0.00	0.03	0.02	0.04	0.03	0.03	0.03	0.02	0.24	0.34
Social benefit	0.11	0.01	0.21	0.11	0.16	0.01	0.01	0.00	0.00	0.00	0.00	0.77	0.98
Financial assets	1.28	3.86	3.61	2.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.23	0.00
Total	**26.97**	**20.89**	**34.27**	**25.57**	**36.78**	**49.15**	**40.40**	**31.69**	**40.19**	**33.70**	**31.18**	**422.59**	**600.20**
Balance (receipts-payments)	**8.07**	**10.46**	**-1.00**	**1.51**	**12.11**	**1.84**	**6.34**	**14.97**	**18.39**	**31.03**	**46.48**	**131.01**	
Financing, net	**-2.47**	**-0.92**	**-1.62**	**-1.87**	**-2.57**	**-0.50**	**-1.29**	**-0.73**	**18.34**	**9.76**	**2.25**	**18.05**	
Debt repayments, domestic	0.00	0.88	1.09	0.82	0.00	0.00	0.00	0.00	0.00	0.00	5.00	7.79	0.00
Debt repayments, external	2.47	0.04	0.53	1.05	2.57	0.50	1.29	0.73	0.66	0.24	1.75	12.17	0.00
Borrowing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.00	10.00	9.00	38.00	38.00
T-bills for cash management	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CB credits	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cash discrepancies (+expenditures)	7.25	6.76	2.44	4.07								20.53	0.00
Change in cash balance	-1.64	2.77	-5.07	-4.43	9.54	1.34	5.06	14.24	36.73	40.79	48.73	128.53	0.00
Cash balance	**8.36**	**11.13**	**6.06**	**1.63**	**-8.35**	**-7.01**	**-1.95**	**12.28**	**49.01**	**89.80**	**138.53**		

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Conclusions and recommendations

- Volatile cash flows - relatively large forecasting errors are expected
- Initially forecast the cash flows based on historical time series analysis (except debt service where Debt Unit should provide forecasts)
- Build up a network of revenue collecting agencies and key line ministries to provide forecasts complementing the time series analysis
- Focus - revenues and non-discretionary expenditures (debt service, statutory expenditures, salaries, pensions)

Conclusions and recommendations

- Incorporate the cash flow forecasts into an aggregate cash and borrowing plan
- The fiscal space for total discretionary expenditures (goods and services, capital expenditures) will be a result of revenues and borrowings minus non-discretionary expenditures.
- This fiscal space should be allocated through warrants or similar legal instrument as stable and predictable as possible to the line ministries, ideally on a quarterly basis

Improving cash flow forecasting and planning

- Typical parts of an action plan
- Institutional issues
  - Set up a dedicated cash management unit (CMU) with 3-4 staff members; good knowledge of Excel is essential. CMU will have mandate to request cash flow forecasts from revenue and spending authorities
  - Establish a cash management committee with mandate to propose budget fund releases (ideally on a quarterly basis), funding operations and provide guidance on TSA implementation.
  - Establish a technical sub-committee ensuring that the proposals for budget fund releases are adequately prepared. The CMU will be responsible for calculating the fiscal space for overall discretionary spending. Budget department will be responsible for proposal of allocation for various purposes

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Improving cash flow forecasting and planning

- Typical parts of an action plan, cont…
- Develop a database of cash flows on monthly basis, including cash balances on main bank accounts (TSA)
- Use data to identify revenue and expenditure patterns
- If patterns exist, use it for forecasting, focus on revenues and non-discretionary expenditures, monthly basis
- Request revenue forecasts from revenue authorities
- Request expenditure forecasts from key line ministries, considering your own resources
- Consider using short term borrowing options to smooth the expenditure profile
- Incorporate the forecasts in an aggregate cash and borrowing plan
- Use the plan to release funds and plan the borrowings
- Develop weekly and daily forecasts
- Develop a procedures manual

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