

PEMPAL-Treasury COP

Key Performance Indicators (KPIs) for Cash Management: Design, Challenges & Examples

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Outline

KPIs: what,
why and
when

Cash
Management:
the High-Level
Objective

Cash
Management
KPIs in more
detail

Some Wider
Issues



Some Introductory Points

KPIs are indicators...

- Measurable values that show progress towards a key objective
- They help to assess and communicate performance – and to help management identify areas for improvement
- Trends often more important than absolute values

...that can deliver value

- “Using KPIs introduces objectivity, ensures focus, and creates consensus. What the treasury team is acting on becomes aligned with what matters to the [Ministry]*
- Quoted in ‘Treasury and Risk’ (Sept 2015)

But KPIs are not targets

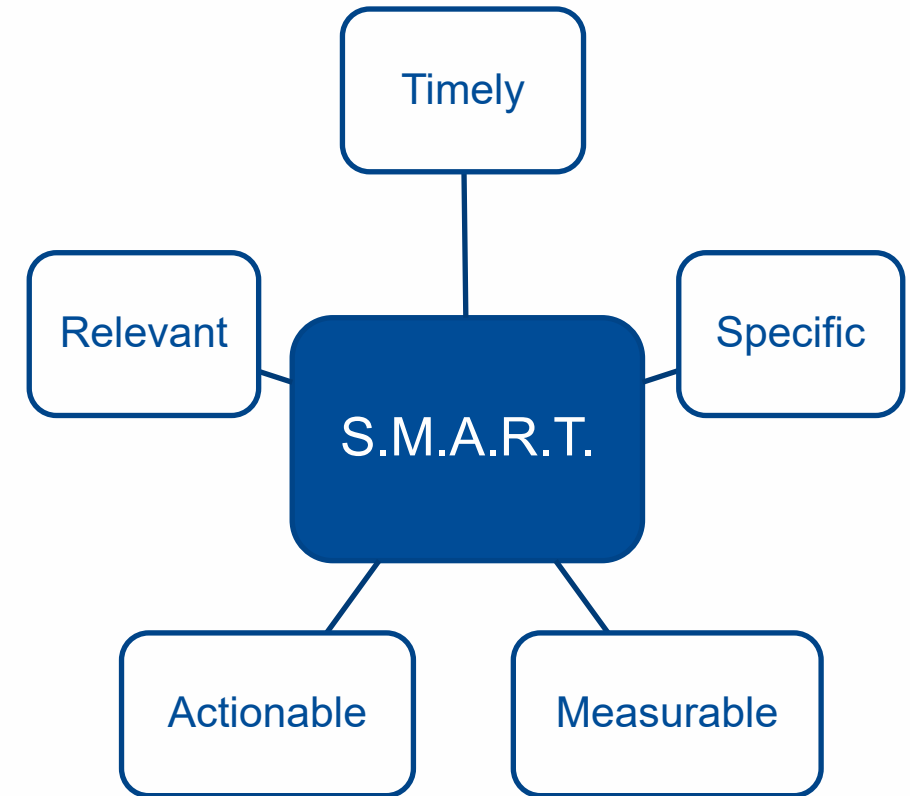
- The same metric may be adopted as a target
- But beware of Goodhart’s Law “When a measure becomes a target, it ceases to be a good measure”
- Targets => incentives => risk of perverse outcomes
 - [Cobra effect]

Broad Principles

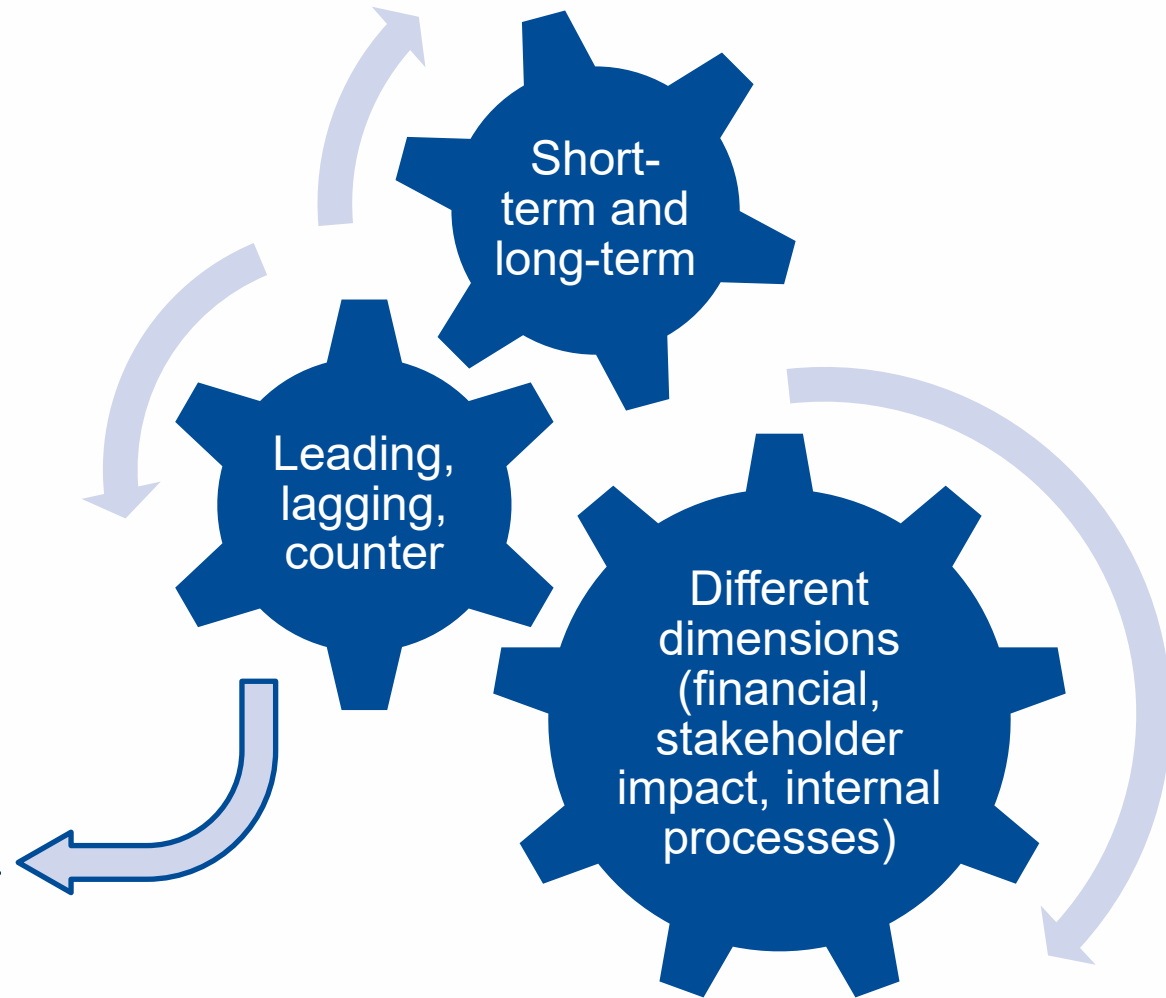
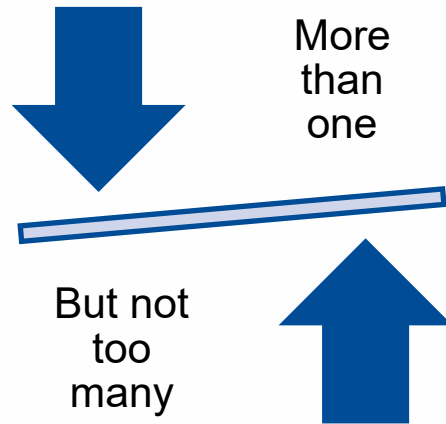
KPIs should be:

- Directly linked to objectives
- Provide meaningful information
 - Identify what is success [which may be meeting a planning target] – what does “good” look like
 - Information that can be used
- Quantifiable
 - Although may be based on qualitative information – eg satisfaction survey
- Balanced, understandable and shared
- Use information and methodologies that are reliable and verifiable
- Provide a basis for measuring performance over time

KPIs should be “SMART”
(At least in English!)



Balanced?



- Lagging KPIs
 - What has already happened (forecast outturn)
- Leading KPIs
 - A glimpse of the future (errors rising over time)
- Counter KPIs
 - Identifying unintended harm (eg strain on IT)

Private sector Analogues?

Some private sector measures have Government analogues

Corporates need: a cash buffer; accurate forecasts; to avoid arrears (outstanding creditors)



But often far too many

Oracle Net Suite identifies 24!



Limited relevance to government

objectives are different

business is different

tools are different

Operating cash flow	Working capital	Forecast variance	Days sales outstanding
Days payable outstanding	Account receivable turnover	Accounts payable turnover	Current ratio
Return on Equity	Cash Flow from Operations	Free cash flow	Cash flow coverage ratio
Operating cash flow margin	Cash flow from investments	Levered cash flow	Cash flow from financing activities
Cash Conversion Cycle	Total available liquidity	Liquidity ratio	Daily & weekly aged debtor analysis
30-day & 13-week operating cash burn	Weeks of liquidity on hand	Sustainable grow rate	Price to cash flow ratio

Source: <https://www.netsuite.com/portal/resource/articles/accounting/cashflow-metrics.shtml>

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Cash Management: the High-level Objective

“Ensuring cash is available to facilitate smooth execution of the budget”

Zero arrears, no delays in payment processing *

Positive balance in the TSA**

* Austria target: zero payments not made for lack of liquidity
South Africa target: percent of government's liquidity requirements met (positive cash balance at end-month)

** Compare DeMPA benchmark (DPI 11.2.1)
“The government maintains positive balances in its bank accounts (in the banking sector or in the TSA), as necessary using short-term instruments (such as T-Bills) to cover temporary cash shortages and avoid payment delays. A CB overdraft cannot be considered part of the positive balance”

See also PEFA PI-22 on monitoring arrears

Example: Australian Office of Financial Management

Objective: Ensure the government can always meet its cash outflow requirements

Key activity:
Establish a liquidity management strategy

Key activity:
Conduct the cash management task

KPI: approved strategy before start of year

KPI: number uses of central bank overdraft facility (target: zero)

Necessary but not Sufficient

Minimizing the costs of holding cash balances in the banking system

Reducing risk: operational, credit and market risk

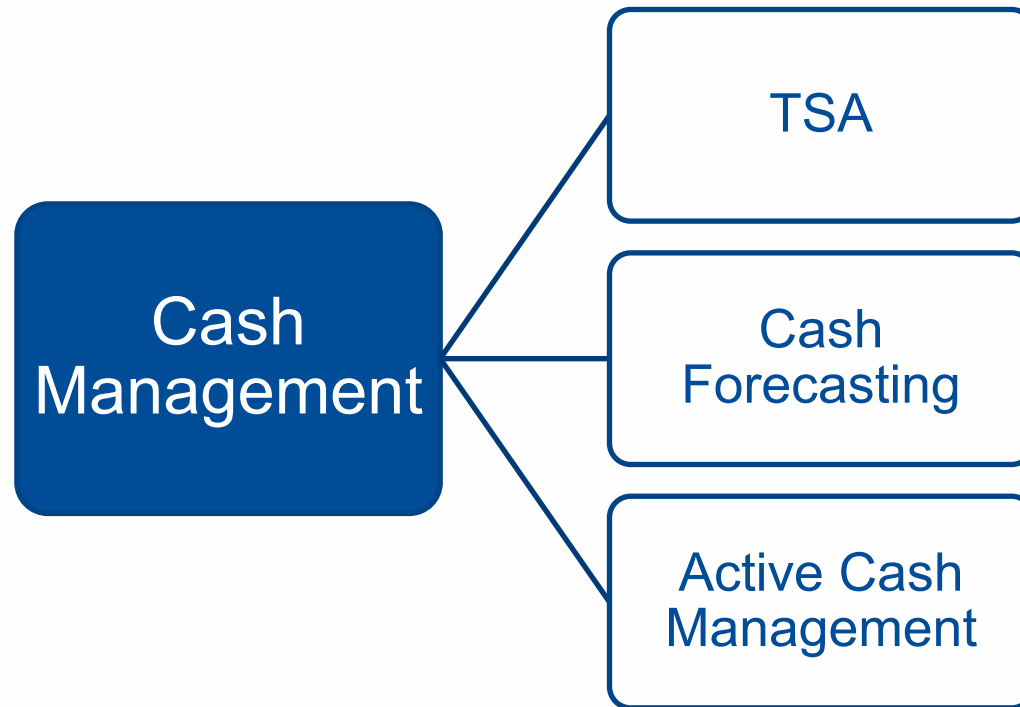
Also want to measure cost-effectiveness, risk reduction and efficiency

Adding flexibility to the ways in which the timing of government cash inflows and outflows can be matched

Supporting other financial policies and in particular debt management policy, monetary policy and the development of domestic financial markets



Break into Constituent Parts



There is a second **value for money** dimension

Economy

- Minimizing the cost of resources used or required (inputs)

Efficiency

- Maximizing the output generated from units of resource used

Effectiveness

- Measuring how successfully the system achieves its desired outputs. This includes the relationship between intended and actual results (outputs)

Within a Risk Management Framework: market, credit & operational risk

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TSA: Coverage

Not straightforward to measure

- PEFA (PI-21.1i) Extent of consolidation of the government's cash balances [An A score requires "All bank and cash balances are consolidated on a daily basis"]
- But this does not explicitly measure coverage

Two criteria of a "complete" TSA

- Extends to all government balances (where "government" is central or general government, depending on policy context)
- Cash balances within the TSA are fungible – cash under control of the Treasury and available to meet commitments

Compare:

- Fungible balance within the TSA with total balances in the banking system (maybe after allowing for balances specifically excluded – e.g. pension and wealth funds)
- Measure will vary across the year; monitor over time

TSA: Transactions

Measures of effectiveness and efficiency with which the TSA is managed – and which also minimize the need for any balances in the banking system

- There are other efficiency measures for cash management – see later
- Treasury/DMO may set KPIs for others: AFT (France) example – target on MDAs for notifications of payments >€1mn – in 2022 achieved 99%

Inflows

- Time lags in receipt of revenue (from leaving payor's account to TSA)
- Percentage tax revenue collected electronically (Chile)
- Fees paid to banks as a proportion of revenue
- Failure of financing receipts to arrive by expected date

Outflows

- Size (ideally zero) of cash advances to banks as a proportion of expenditure
- Proportion of payments made by due date
 - Ratio of payment accruals approved but unpaid to accruals approved (Indonesia)
 - Debt servicing on due date
- Speed of payment processing (once due date is reached) Time lag for flow from TSA to payee's account
- Payments made with cheques or cash

Cash Flow Forecasting

Forecast error – in proportion or nominal terms - is straightforward conceptually. But prior decisions:

- **How far to drill down** (eg beyond main economic categories)
- **Decide the relevant period** (eg forecast for each month as made at the start of that month; but relevant to consider forecasts over a shorter period)
- **Identify constrained variables** (impact of cash rationing)
- **Identify policy variables**

PEFA identifies need for forecasting:

- PI-21.2: extent to which cash flows are forecast and monitored. An A requires a cash flow forecast prepared for the fiscal year, updated monthly on the basis of actual cash inflows and outflows
- But this is about process not contribution to objectives

DeMPA requirements – see annex

Forecasting KPIs in Practice

Average deviation over a period (daily, weekly, or monthly) in total revenues (cash inflows) and in total expenses (cash outflows), and in the difference between them (before policy responses)

Separate indicators for the major categories of cash flows. All such indicators may be defined in both normal and percentage terms

The forecast for the same aggregates as the time to the forecast period falls (i.e. the closer to the period, the better should the forecast be)

Key objective is that they decline over time – Türkiye example:*

	2014		2015		2016		2017		2018 Jan.-Aug.	
	Realization	Benchmark	Realization	Benchmark	Realization	Benchmark	Realization	Benchmark	Realization	Benchmark
Revenue	5,78%	6,00%	5,19%	5,50%	4,16%	5,50%	7,49%	5,00%	5,68%	5,00%
Expenses	5,84%	5,00%	4,77%	4,50%	3,24%	4,50%	3,14%	4,00%	3,89%	4,00%

* Türkiye is to be congratulated on publishing these numbers – not many countries do

Forecasting KPIs – other points to note

Errors in net cash flow

- May be very large, even if errors in main inflows and outflows are small (difference between two large numbers)
- Compare the net error with e.g. revenue

Analyzing actual performance

- Analysis of deviations, shortfalls essential part of the task
- Identify lessons learnt, recycle into next period
- Note: forecast errors may not be “well behaved”
 - Errors over time are not independent (serial correlation)
 - Errors will not be normally distributed

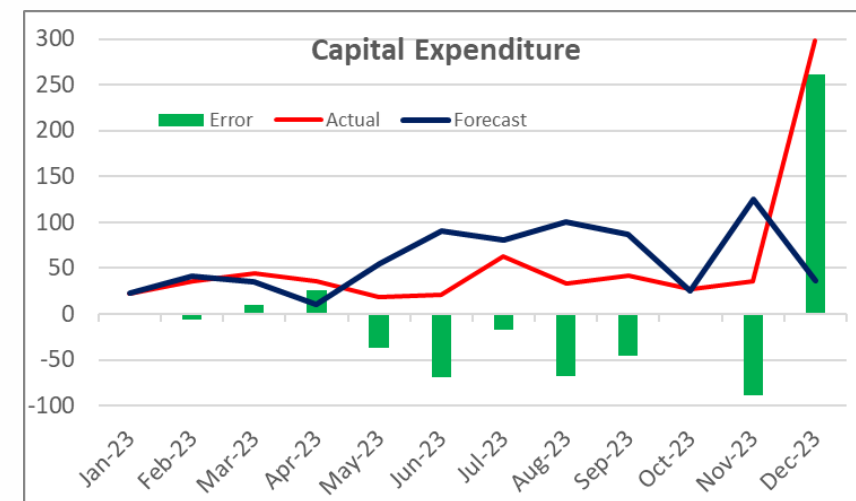
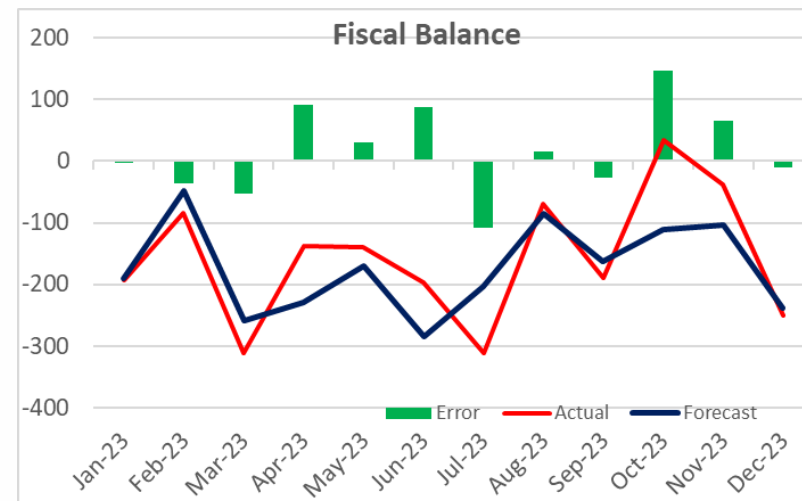
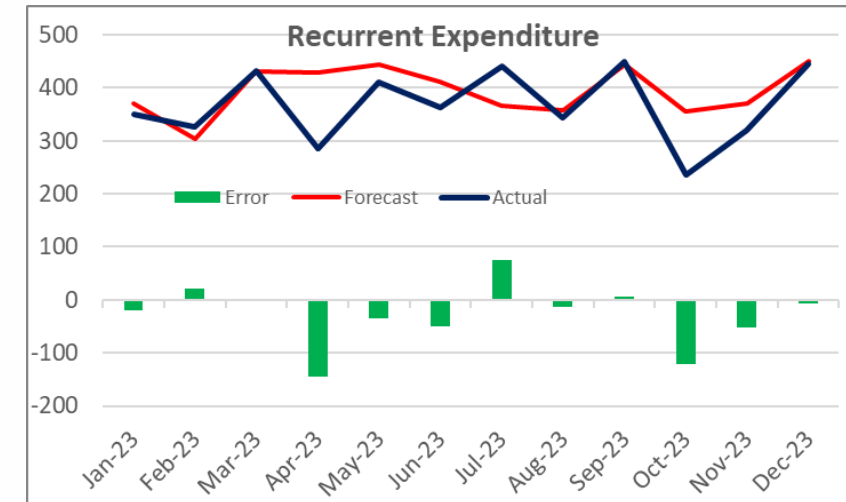
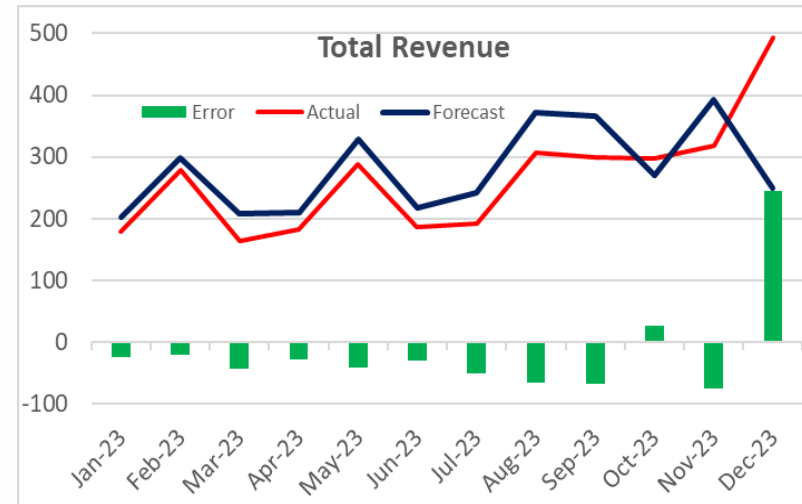
Imposing requirements on MDAs

- Incentives on MDAs must be in line with Treasury KPIs
- Example: UK – MDAs expected to forecast
 - Total monthly expenditure within error of 5%
 - Daily (low value) payments within error of £15 million
 - Daily (high value) payments within error of £5 million
- MDAs comply because good forecasters benefit

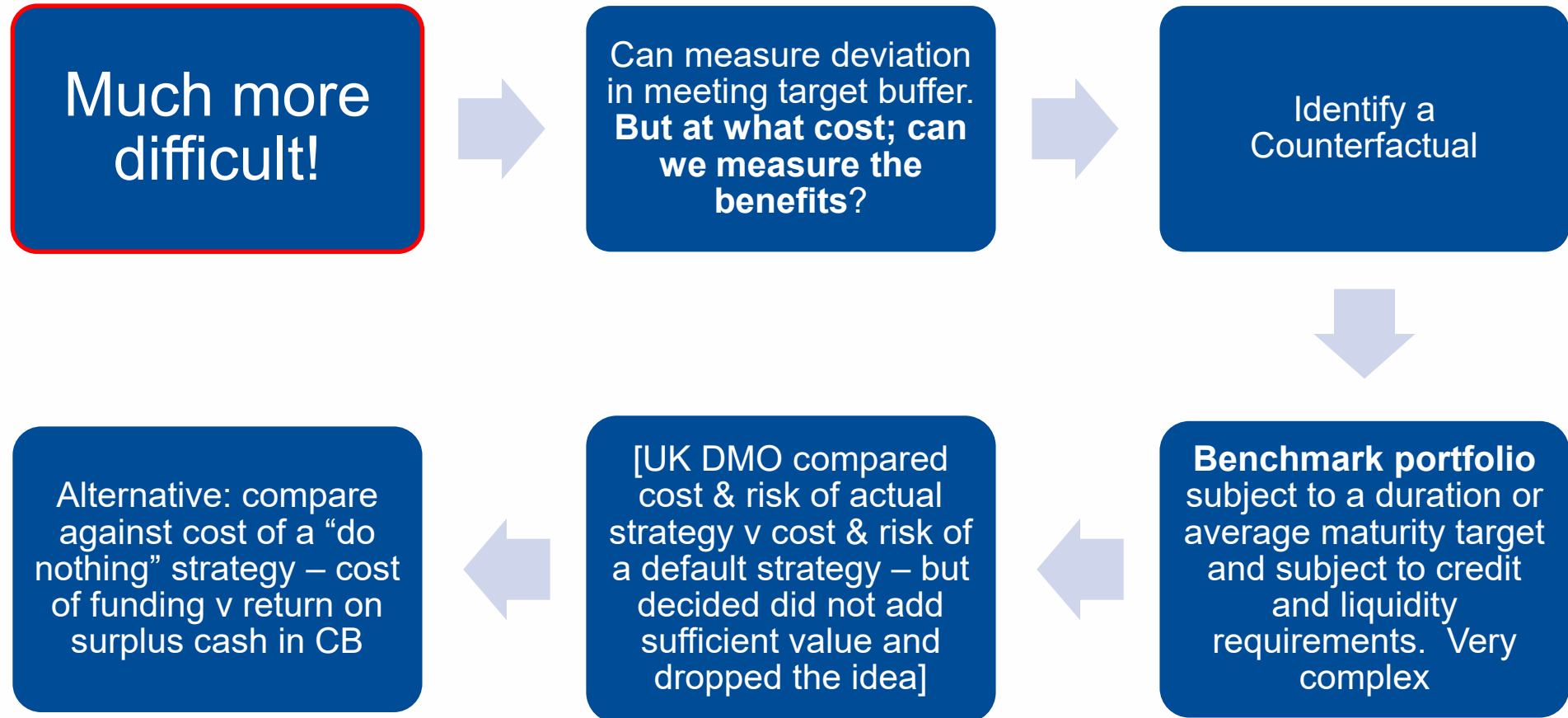
An Illustration

- Annual performance looks very different from monthly performance (also weekly compared with monthly performance)
- End year surge can be highly significant, both revenue and expenditure
- Annual error in fiscal balance is 11%; and average monthly error is 17%. But monthly standard deviation is 134%! Compare fiscal balance error with e.g. revenue.
- Conclusion: Monitor several indicators

Forecast performance of an Asian country in 2023



Active Cash Management



Breaking down the Components

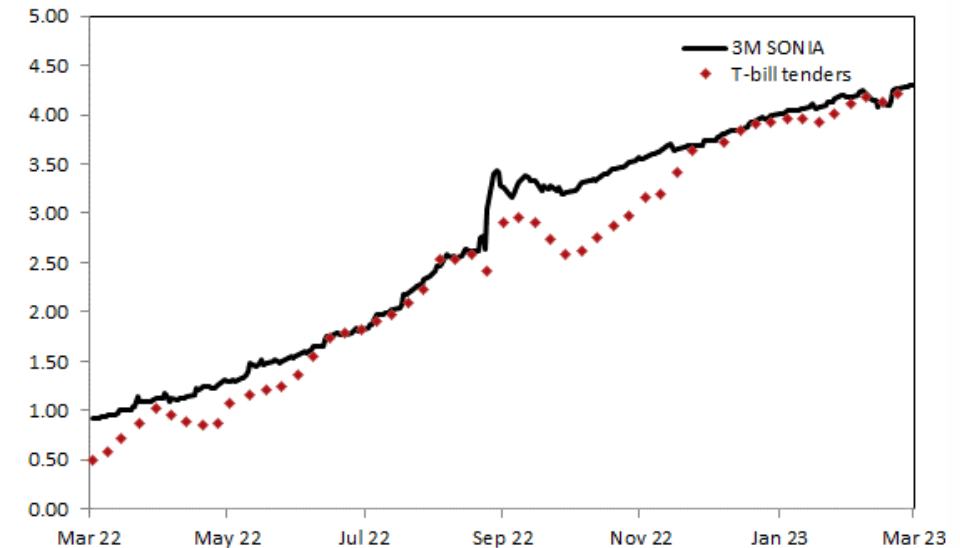
Compare Tbill issuance rate v interbank rates

- UK Example

Rate of return on investment in banking sector

- AFT example “earn interest on cash balances on average of at least EONIA for investments in short-term deposits and overnight reverse repo, and EONIA less 2 bps for reverse repo longer than 1 day”
- Compare also with alternative (in central bank?)

Three-month Treasury bill tender yields compared with SONIA rates in 2022-23



Source: <https://dmo.gov.uk/media/tfidb5fy/gar2023.pdf>

DeMPA: DPI 11.2 The government earns a market rate on its cash balances (C); and there is a defined liquidity buffer or target, and an appropriate investment policy in place (B); and the actual cash and liquidity balances have met the specified targets on at least 90% of days in the previous year (A).



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Wider Impact of Cash Management Operations

Monetary policy

- Sharing cash flow forecasts with CB (a requirement also of DeMPA DPI 7.2)
- Sharing – and meeting – cash balance targets with CB
- Understanding about timings of government operations

Market Development

- Money market spreads over time (Tbills v interbank or policy rate)
- Development secondary market liquidity (esp Tbills)

Debt Management

- Transfer of forecasts, and response agreed collectively

Risk

- Market risk appetite identified and monitored
- Credit risks identified, procedures and dealing limits established, and limits maintained *

UK Example at Annex

** Austria DMO has formal target to meet its creditworthiness criteria for all active investments*

Operational Indicators

Measures of
cash
management
efficiency

Publishing details (externally and/or internally) of transactions within specified time

Accuracy of recording transactions – and that all transactions settle on due date

All transactions in accordance with operational notice/regulations; and controls duly evidenced

No breach of credit limits

Finalizing the daily cash position to due time

Data and other exchanges with central bank in line with MoU/SLA



Wider Treasury Context

Focus has been on cash management, not wider Treasury functions

- KPIs must potentially also cover: accounting, reporting, budget execution policy and mechanisms, IT strategy etc

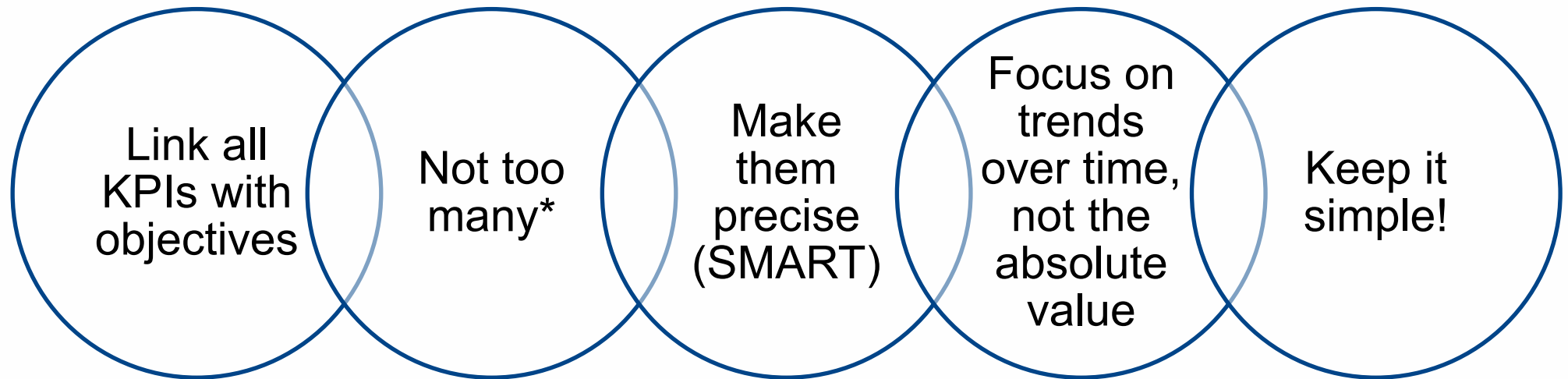
In the wider context, how should KPIs be used?

- Are all KPIs published and reported on (internationally some publish, some do not)?
- Are they linked to individual (or team) objectives – and to job remuneration?
- Can they be used to monitor workloads; as an early warning of resource pressures

Examples of Operational Indicators applying to all Treasury functions

- IT downtime
- Zero errors in published material (inc in financial statements or on website)
- Financial statements on time and unqualified
- Reconciliation errors
- Compliance errors
- Responding to external queries to specified time
- Staff turnover, staff absence
- Complaints from creditors, counterparties, MDAs
- Audit observations
- Reporting delays

Some Conclusions



* Not too many, but think about their coverage: different aspects (TSA, forecasting, active cash management), activities (efficiency, effectiveness, economy), and time perspective (leading, lagging)

One possible example (although 10 years ago): Varea & Arosteguiberry identified 10 key indicators covering the cash management cycle – see annex and references

Annex: Cash Forecasting Requirements under the Debt Management Performance Assessment (DeMPA)

- DPI-11i: A score C requires
 - A monthly cash plan of the approved budget is available for the DMO for the budget year;...and is updated during the year in line with any budget revision or more frequently if necessary.
 - A rolling forecast of cash flows is available for each month extending at least three months ahead.
 - The forecast must also be shared with debt managers:...and taken into account when developing the borrowing plan for the period ahead
 - There are processes in place to measure and improve forecast performance, which could be evidenced by the following:
 - Forecasts are compared against outturns
 - Deviations are used when developing policy
 - Forecast errors should be reducing over time
 - Forecasts of future cash flows are obtained from others in the MoF, and from MDAs, covering at least 80 percent of expenditures and revenues.
- Scores B and A also focus on cash flow forecast granularity and frequency of updates, with increasingly stronger requirements
- Note: the focus is on process as much as performance

Annex: Cash Management KPIs in the UK

Objective	KPIs
Sufficient cash to meet payment obligations	<ul style="list-style-type: none"> Always a positive TSA balance
Avoid conflict with BoE's monetary policy operations	<ul style="list-style-type: none"> Achieving the target balance passed to the BoE Avoid any clash with BoE's OMOs
Avoid undermining efficient functioning of sterling money markets	<ul style="list-style-type: none"> Difficult to identify KPI Review based on discussion with BoE and counterparties and HM Treasury
Costs & risks must be transparent measured and monitored; and performance assessed. Ethos of cost minimization not profit maximization	<ul style="list-style-type: none"> Report quarterly details of activity including performance after cost of funds (ie net returns) and risks incurred [Recognizing that some results beyond DMO's control] Record all breaches of risk limits
DMO should maintain a credible reputation in the interest of a low-cost sustainable system	<ul style="list-style-type: none"> Open and transparent; channels of communication and complying with market standards Compliance with own operational notice; complete and accurate instructions; successful settlements

Annex: One recommended set of KPIs to cover the Treasury Cycle

Strategic Phase	Indicator
Cash Flow Forecasting	<ul style="list-style-type: none">Expenditure paid monthly/expenditure planned monthly (as a percentage). To also cover budget execution, a further sub-indicator might be one in which the denominator is the budget executed monthly
Revenue Collection	<ul style="list-style-type: none">Amount of revenues captured by the treasury through the TSA/total amount of revenues received through any account (as a percentage).Amount of monthly revenues paid by the treasury by electronic means/total amount of monthly revenues paid by the treasury (as a percentage)Time taken to make revenue transfers to the treasury (in days).
Execution of Payments	<ul style="list-style-type: none">Time taken to make revenue transfers to the treasury (in days)Amount of monthly payments by the treasury by electronic means/total amount of monthly payments by the treasury (as a percentage)Time taken by the treasury to make payments to the beneficiary (in days).
TSA Scope	<ul style="list-style-type: none">Total of institutions in the TSA/total central government institutions (as %)
Remuneration of TSA surplus	<ul style="list-style-type: none">TSA remuneration rate (as a percentage)
Arrears	<ul style="list-style-type: none">Balance of arrears

Source: Varea & Arosteguiberry [see references]

References

- PEFA Secretariat “Framework for assessing Public Financial Management” (2016, 2nd edition 2019), <https://www.pefa.org/resources/faq>
- World Bank “Debt Management Performance Assessment Methodology” (2021 edition) <https://documents1.worldbank.org/curated/en/526391628746190611/pdf/Debt-Management-Performance-Assessment-Methodology-2021-Edition.pdf>
- Marco Varea & Adriana Arosteguiberry “Treasury Management Efficiency Indicators”, Chapter 2 in “Public Financial Management in Latin America: The Key to Efficiency and Transparency” (IADB & IMF, 2015) <https://publications.iadb.org/handle/11319/7123>
- Cem Dener “Toolkit for rapid assessment of Treasury Single Account (TSA) operations” (World Bank, 2017) <http://documents.worldbank.org/curated/en/731931509729169176/Toolkit-for-rapid-assessment-of-Treasury-Single-Account-TSA-operations>