Forecasting in government to achieve value for money

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Two minute introduction to the NAO

Our role

- To provide independent information, assurance and advice to Parliament on use of public resources
- To help promote better financial management and value for money

Our audit work

- Totally independent of government
- Financial: To audit of the accounts of all central government bodies
- Value for money (VFM): To produce around 60 reports each year,

Our audiences

- The Committee of Public Accounts (PAC) – chaired by Margaret Hodge
- Other Select Committees
- The public

Our Vision

Our vision is to help the nation spend wisely.

We apply the unique perspective of public audit to help Parliament and government drive lasting improvement in public services.

Three strategic themes

- Cost effective delivery
  - improving the quality of government decisions about how to deliver its objectives, and helping to drive waste out of its delivery arrangements
- Informed government
  - improving the quality of information used by decision makers for accountability and at key points in the management cycle, including business planning
- Financial management
  - improving allocation and control of public money, through more robust financial management and increasingly transparent reporting

Our VFM studies

- Scrutinise the economy, efficiency and effectiveness of public spending
- Studies don't comment on the merits of policy but aim to conclude on whether value for money has been secured
- Studies typically take 6-9 months, but some are completed in 3 months
- Use a mix of quantitative and qualitative methods
- Increasing emphasis on enhancing the type and rigour of the analysis included in studies

The failure of the FiReControl project, July 2011

Page 11 – Failed fire service shake-up sent £469m up in smoke

Page 2 – £469m was ‘wasted’ by Labour on fire centres

Page 2 – Prezza’s a £1/2bn ‘waster’

Page 3 – Report fires salvo at £469m wasted on rescue service

NAO VfM conclusion:
This is an example of bad value for money. FiReControl will have wasted a minimum of £469 million, through its failure to provide any enhancement to the capacity of the control centres of Fire and Rescue Services after seven years.

Chair of PAC
“The report details a catalogue of mismanagement, including a seemingly careless approach to fundamental elements such as costing and IT system design...”

Carrier Strike, July 2011

NAO VfM conclusion:
The outcome of the Strategic Defence and Security Review affects Carrier Strike in two ways, both of which could adversely affect the achievement of value for money.
First, the Review is unaffordable unless there is a real terms increase in defence funding in the latter half of the decade...
Second, the Review decision radically changed the Carrier Strike concept and introduced a decade long capability gap.

Page 1 – Defence review 'flawed by drive to cut costs'
Telegraph

Page 2 – Navy's £10bn new aircraft carriers could face the axe
Daily Mail

Page 16 – Watchdog in challenge to £6bn aircraft carrier plans
theguardian

Page 17 – UK can't afford 2 carriers
THE Sun

Page 6 – Doubt over final bill for new aircraft carriers raises fears for restoring Forces' capability
THE TIMES

So what can we investigate?

Departments

- 24 Ministerial Departments
- 20 non-ministerial Departments (mostly regulators)
- 334 Agencies and other public bodies
- 12 Public corporations
- 152 Local Authorities in England

Budget

- £720bn (US$1,110bn) in 2013-14
- £47bn in capital

Staff

- Around 470,000 Civil Servants
- Over 5 million in the public sector (including the NHS)

So why forecasting?

- Much work has been done to examine the accuracy of government's macroeconomic forecasts (AME), and forecasting for key spending areas
- Yet there has not been a systematic review of the quality of departmental forecasting of programme and administrative spend (DEL) and how that feeds into management strategies.
- Key drivers for study:
  - We often identify weak forecasting as a contributory factor to poor VfM decisions
  - Need for accurate forecasting of spend has grown with the difficult economic climate
  - New spending controls announced by HM Treasury in April 2012 include the need for departments to identify 5% contingency from their DEL to fund unforeseen pressures s.
  - Recent forecasting failures (e.g. West Coast Mainline) led to Macpherson Review of QA for modelling.

Key assertion

- Failure by departments to understand future spending and activity levels for new initiatives and business as usual will drive short-term decision making and crisis management that will inevitably lead to bad VfM.

- Good quality forecasting and appropriate risk management strategies have an important role to play in ensuring departments make decisions in light of their spending commitments and budget envelopes in order to protect VfM.

I. Methods

Method	Aim
Review of NAO back catalogue	Highlight good and bad practice from past work
Survey of analysts	Short online survey on their skills, the skills of customers of their work and the proportion of their time spent producing forecasts
Focus groups of senior analysts	Exploring supply, demand, quality assurance and challenges in producing forecasts
Survey of Finance Directors	Self–assessment of skills, resources, maturity of forecasting, use in financial management and challenges
Case Studies of 2 departments	Combine interviews key stakeholders, review of board or sub-committee minutes and process mapping of the forecasting of a major area of spend
Review of COINS/OSCAR data / Role of the centre	Analysis of what the data tells us about macro level and programme level budget management; consideration of how forecasting relates to spending control framework
Private Sector Comparison	Investigate prominence given to forecasting in large corporations, what good practice looks like, the different incentives which companies face and what Government could learn

Part 1 – The role and importance of forecasting

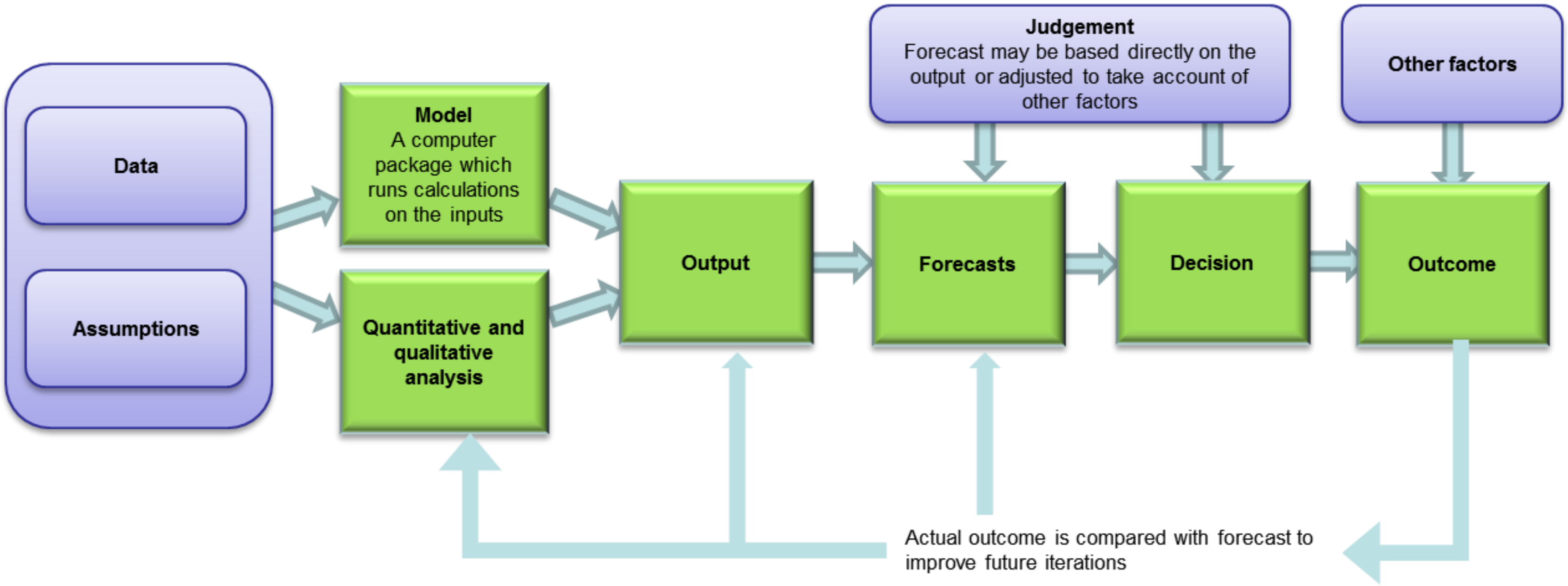
Part 2 – The production of forecasts

Part 3 – How forecasts are used

Part 4 – The departmental environment for forecasting

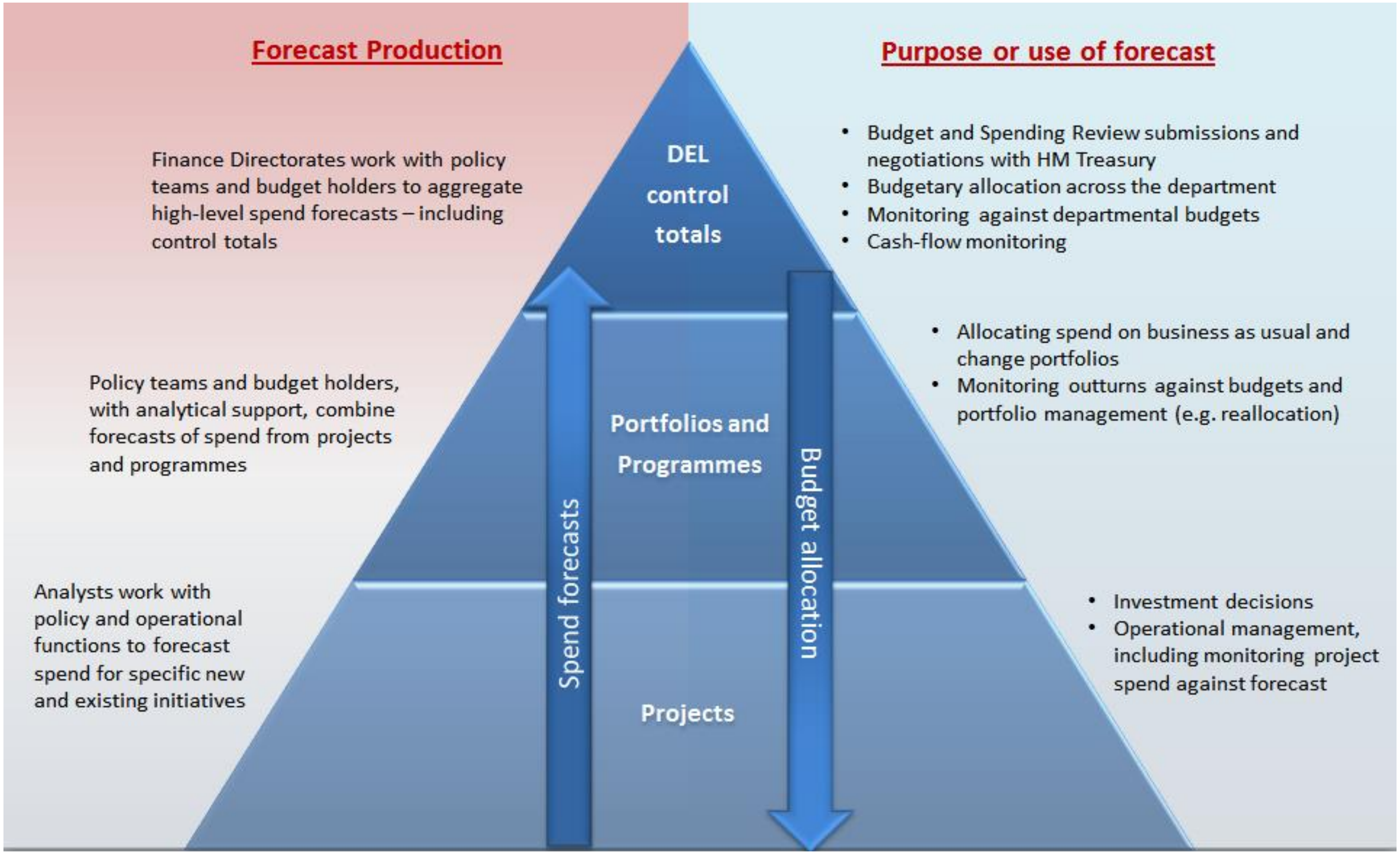
Part 5 – The role of the centre of government

What is forecasting?



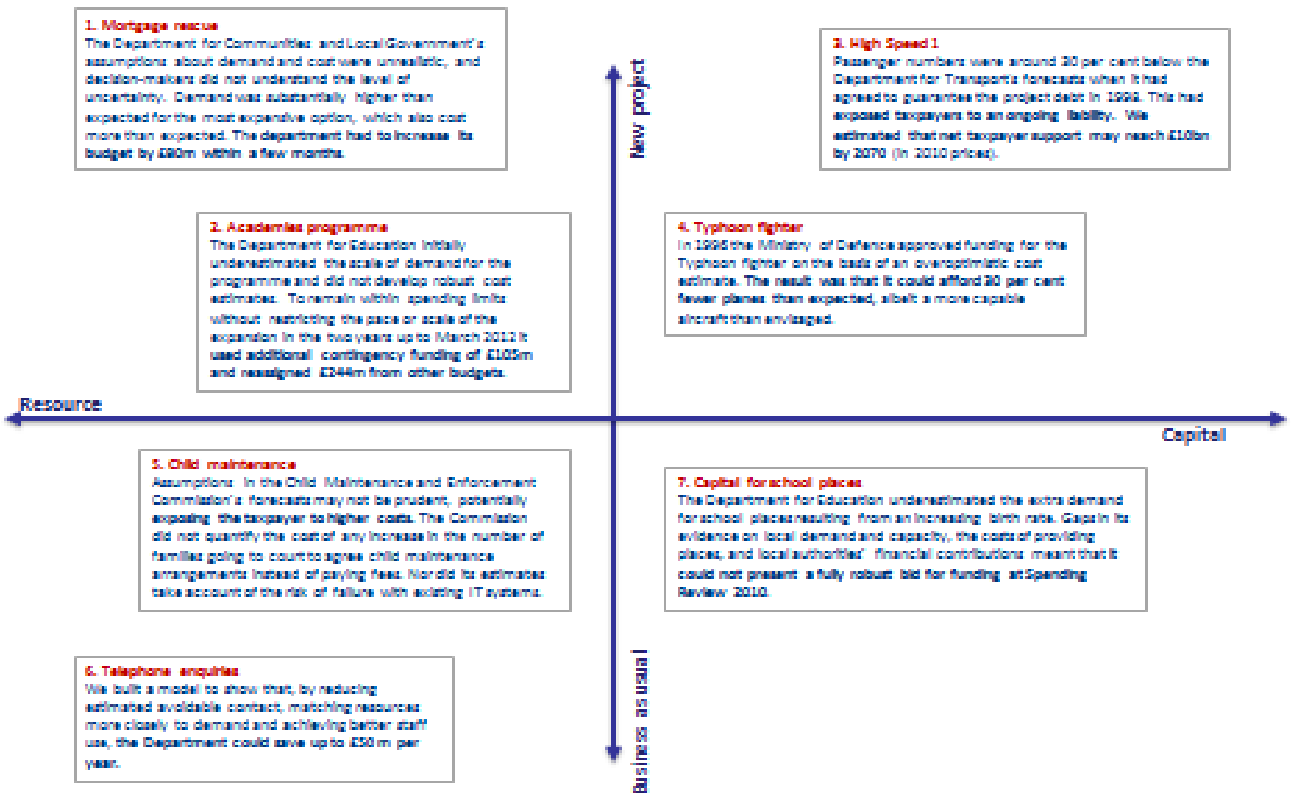
How is forecasting used?

1. At project and programme level, departments use spend forecasts (based on forecast costs, demand, revenue, resources, etc) to consider new investment as well as whether existing initiatives need to be changed, terminated or resourced from elsewhere.
2. At the aggregate level, departmens use forecasts to help manage total spending and meet annual budgets.



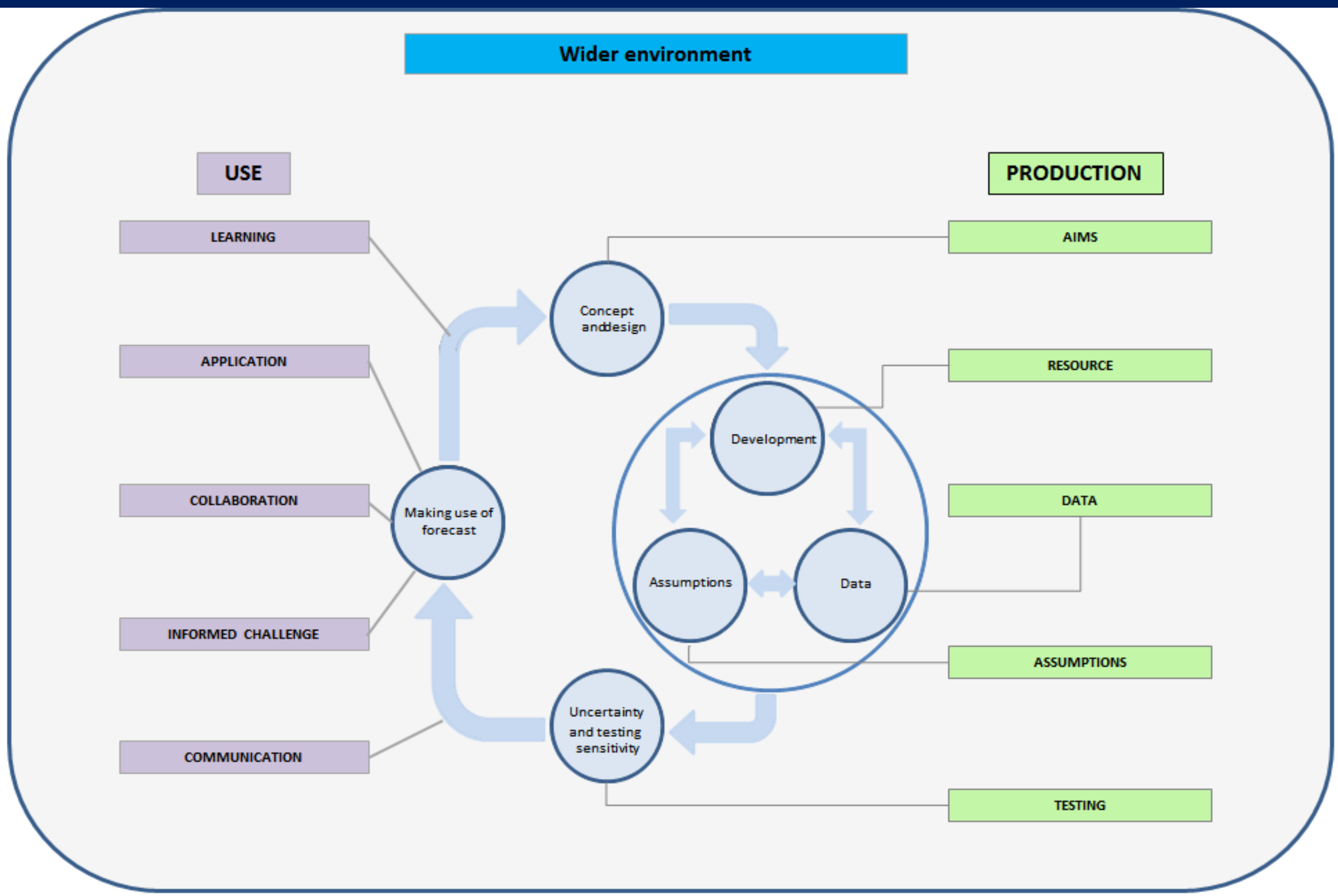
Examples of poor forecasting from our back catalogue

1. Some examples of good practice, but over 70 of our reports in the last 3 years have identified weaknesses in forecasting.
2. The most cited failings = poor data; unrealistic assumptions; a lack of forecasting or modelling; and inadequate sensitivity analysis
3. There are often substantial VfM impacts

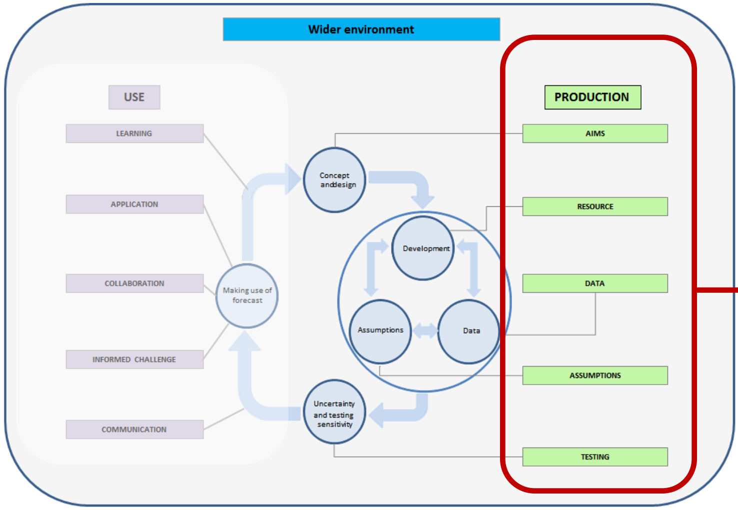


Good forecasting practice

1. Good production needs: high-quality data, skilled staff, well-reasoned assumptions and clear presentation of uncertainty.
2. Good use needs: decision-makers to understand the level of uncertainty and the reasons for it so they can make risk-based decisions
3. The processes of producing and using forecasts must be well integrated, with shared understanding between all parties.
4. This requires a supportive environment which promotes good practice and ensures accountability.



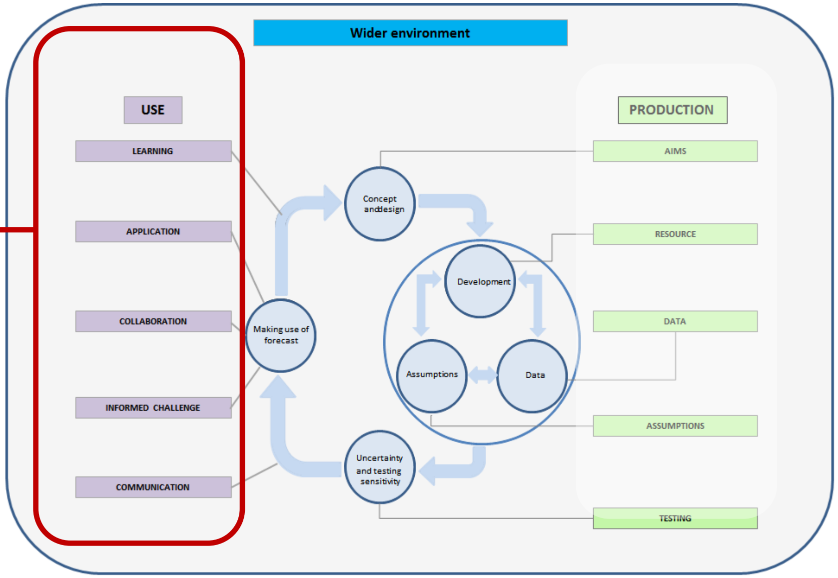
Forecast production



- Aims: Examples where purpose of forecasting lacked clarity, making it harder to detect whether it is fit for purpose
- Resources: Government has substantial pool of expertise, but some questions over allocation and resource constraints
- Data: Lack of good quality data and inadequate use of sensitivity analysis are concerning; forecasters need to present how poor data affects uncertainty
- Assumptions: We often identify unrealistic assumptions; ownership and challenge are needed.
- Testing: Differing views on the extent of QA; despite assurance, we continue to see errors

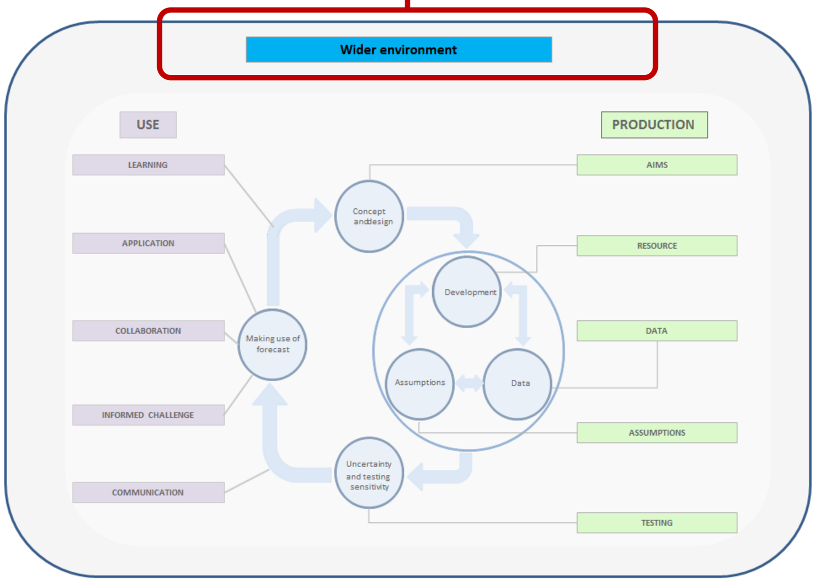
Forecast use – key emerging findings

- Communication: Analysts need the skills to present forecasts and explain uncertainty. Evidence that decision makers are not demanding the analysis they could
- Informed Challenge: Decision makers lack the skills to challenge forecasts
- Collaboration: Perception that there is a disconnect between how forecasts are produced and how subsequently used – especially in financial and risk management
- Application: At an aggregate level, weaknesses in how forecasts are created, aggregated and used for financial planning (including use of point estimates) contribute to programme level volatility
- Learning: Limited monitoring and learning from outturns



Forecast environment

- Supportive: Senior managers need to champion forecasting
- Time pressures: Departments need to manage the balance between rigour and speed. Decision makers need to know where speed affects quality of analysis
- Bias: Significant evidence that decision-makers want forecasts to supportive pre-determined views. Suggestion they are ‘blind to uncertainty’. Despite guidance on optimism bias, it continues to be a major problem.
- Integration: Concerns that senior managers need to do more to encourage cohesive approach.



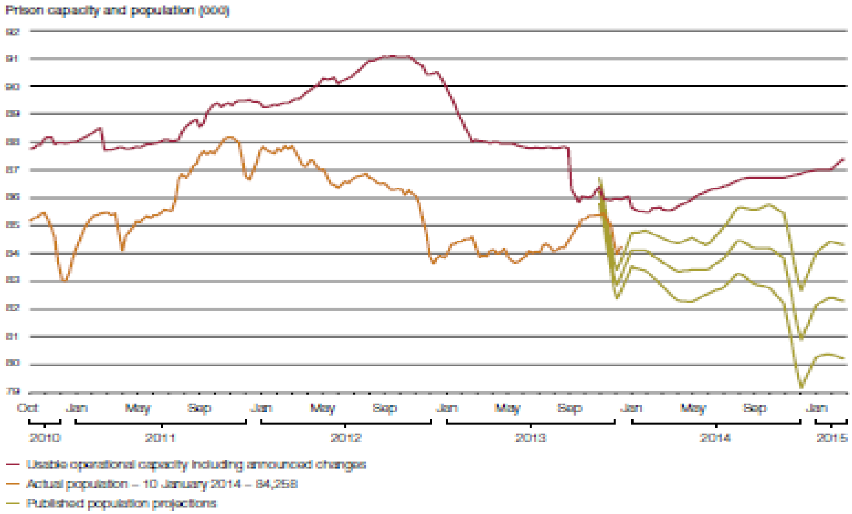
Moj Prison Populatuion

Figure 11
How prison population forecasts inform decision-making

NOMS uses prisoner forecasts to help plan operational capacity and inform policy making

National Offender Management Service (NOMS) manages its estate by combining:

- annual prison population forecasts;
- data on current use;
- forecasts of future capacity; and
- weekly monitoring of actual population figures against projections.



- Forecasts used for short-term operational decisions and medium-term estates planning, as well as the impacts of policy options
- Assumptions are cleared with relevant data owners and analysts, while policy assumptions are agreed with policy colleagues. This is documented and all stakeholders can challenge the assumptions.
- Higher, central and lower projections are informed by scenario analysis, developed in consultation with a wide range of internal and external stakeholders.
- Different levels of quality assurance applied. More technical assurance of the model, its inputs and outputs was undertaken by peer analysts, with these detailed assurance exchanges documented.

BIS budget management

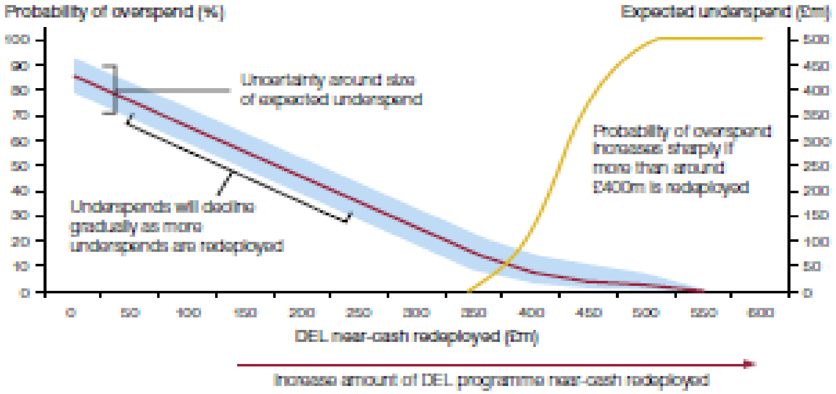
Figure 15

Forecasting spending

The Department for Business, Innovation & Skills has sought to improve its approach to portfolio-level forecasting

In 2011-12, the Department for Business, Innovation & Skills experienced high spending volatility and a DEL underspend of £1.4 billion.

The following year the finance directorate worked with analysts to develop a new approach to forecasting aggregate spending. Rather than collating single-point forecasts, the team aggregates forecast ranges and distributions quarterly from policy teams across around 600 budget lines. This enables them to create a central range and estimate the probability of under or overspending and identify key drivers of volatility. It also lets them present the trade-offs from changing spending patterns so that the Performance, Finance and Risk Committee can reallocate underspends while minimising the risk of overspending.



— Expected underspend — Probability of overspend

(Results assume zero volatility around redeployed funds)

Redeploying **up to around £310 million** will:

- Significantly **reduce the size of underspend** with **no impact** on the **probability of overspend**

The permanent secretary and finance director promoted this approach to budget holders, and used league tables and awards to incentivise accuracy. Directors were set targets of an average 1 per cent underspend against forecast, but could exceed this with good reason. The finance team reviewed forecasts to guard against perverse behaviour (for instance, teams spending money simply to hit targets) and to ensure that teams forecast the most likely outturn rather than the most pessimistic scenario.

The Department identified a number of benefits:

- greater ownership of forecasts by senior policy officials and thus understanding of uncertainty;
- a better central understanding of volatility and how to manage it; and
- strengthened relationships between analysts, policy and finance functions.

For 2012-13, the Department reported its lowest underspend for resource DEL (94 per cent of total DEL) since its formation in 2009-10. It acknowledged, however, that differences in outturn against budgets at the start of the year remain high and it had focused primarily on RDEL.

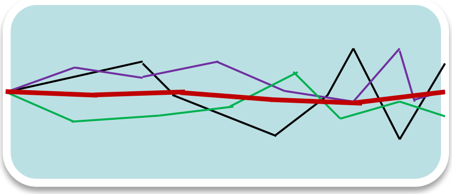
Using ranges around point estimates to understand uncertainty in forecast and discuss probability and size of underspends in order to deploy them earlier

Forecasting and the role of the centre

1. In particular, there is a complex relationship between the budgetary system and the quality of financial management
2. This relationship may engender poor financial management and makes it harder to identify

- Departments have considerable freedom to allocate budgets, within HM Treasury's rules. Spending is most volatile as year-end approaches.
- Most FDs agreed that, while budgets are balanced at a macro level, there was often significant budget switching and this poses a challenge to financial management
- Many factors influence how departments and HM Treasury allocate budgets, including political priorities and unexpected developments. Budgeting should, however, be informed by robust forecasts of spending.
- Most also FDs agreed that better forecasting could help reduce volatility and risks to value (e.g. BIS have developed approach to gather forecast spend ranges for all spend lines)

At the aggregate level, departments rarely overspend and typically register small underspends



Late allocation decisions risk destroying value

However....

Forecasting and the role of the centre

The budgetary system creates its own incentives:

- HMT's aims to control spend and protect value – but we have previously found it addresses the first aim more than the second
- If a department overspends it will require an excess vote, have its accounts qualified and face parliamentary scrutiny.
- Departments therefore focus on balancing budgets by year-end (by switching spending, bringing forward or deferring spend)

Almost all FDs agreed they focused on forecasts for year-end. Most said the spending control framework incentivised them to over-budget and underspend.

…this has implications for forecasting and financial management generally…

- Departments can mask failings by shifting spend against budgets
- Hard to assess quality: changes to expected spending may reflect adjustments to hit targets rather than poor forecasting
- Crowding out good behaviour, by diverting finance resource to focus on hitting targets rather than improving forecasts
- Undermining attempts to use the budgetary system to incentivise better practice; and sending conflicting signals when rules are broken

Departments' estimates provide limited information on spending variation; NAO and Parliamentary reports have identified weaknesses in Parliament's ability to scrutinise spending

In 12-13, HMT allowed many departments to exceed their BX allowance when underspends were much higher than forecast; and with no clear relationship to the quality of their financial management

Work on the private sector

1. We also sought lessons from the private sector and commissioned Deloitte to identify leading practice…

Supportive culture and incentives	Managers should champion the importance of forecasting and support it (e.g. through performance management) to drive up skills. They should be clear on its purpose: as the latest view of future performance, not a ‘route’ back to budget.
Effective challenge	Forecasts in the private sector play an important role in an organisation’s ability to raise investment, and as such are subject to considerable scrutiny from investors. Managers need forecasts to present a true picture of probable future performance – not just a routine opportunity to confirm that they will be delivering their annual target.
Collaboration	Cross-functional collaboration, sharing and transparency leads to better forecasts. Operational and Financial forecasting should be integrated to arrive at a consensus view.
High quality inputs and assumptions	A lean efficient process, supported by latest technology, will not deliver an accurate forecast, unless the input data and assumptions are fit-for-purpose and ownership is clear.
Focus effort	Focusing on key business drivers and areas of volatile spend enables a clear understanding of material changes and impacts, as well as removing effort from areas of little importance.
Learning and adapting	Embed continuous improvement, to learn from mistakes and improve processes, assumptions and inputs.

Summary of key findings

1. Poor forecasting is entrenched problem, leading to poor VfM and taxpayers bearing the costs.

   - Project and programme level - MOD’s reversion decision on Joint Strike Fighter; DCLG overstating estimated impact of New Homes Bonus; overoptimistic passenger forecasts for HS1

   - Aggregate level - departments consistently underspend budgets; FDs identify missed opportunities to spend; and our reports find some departments manage outturns by delaying or bringing forward spending.

Summary of key findings

2. Root causes include:
   - The focus on hitting year-end budget/spending ceilings by shifting spending, which is not conducive to the production and use of high-quality spend forecasts at project and programme levels;

   - Lack of a culture that promotes and explains the importance of forecasting and addresses failings such as:
     - Departments not always making best use of forecasting;
     - Forecasts lacking ranges and sensitivity analysis;
     - 'Optimism bias' and pressure to provide supportive rather than realistic forecasts;
     - The need for decision makers to understand forecasts and associated uncertainty; and to allow for where rapid decision-making means lower quality analysis;
     - Weak relationship between analysts and finance staff;
     - Inadequate challenge, monitoring and lesson learning; and
     - Limited clear sanctions or rewards for the quality of forecasting.

3. The centre of government needs to do more:
   - Macpherson review is encouraging, but its scope is limited and it needs active follow-up;
   - HMT has taken steps to incentivise better forecasting, but these are at risk of being overwhelmed by other incentives in the spending control framework;
   - There is insufficient information for HMT and Parliament to assess the quality of forecasting; and
   - The centre of government needs to collaborate more than it has to date to encourage good forecasting.

High-quality expenditure forecasting is an essential element in achieving value for money for the taxpayer. Despite examples of good practice, our past work has identified many high-profile failures. Forecasting is not taken sufficiently seriously and is often hampered by poor quality data and unrealistic assumptions driven by policy agendas. Departments could improve the value for money they achieve by improving how they produce and use forecasts to manage individual projects and control aggregate spending.

HM Treasury's efforts to improve forecasting through incentives in the budgetary system are unlikely to prove effective given the pressure in the spending control framework to avoid overspending and deliver small underspends. Improvements to transparency and scrutiny are needed to enable HM Treasury and Parliament to assess more effectively the quality of departments' financial management and the value delivered.

P. Forecasting – draft possible recommendations

Departments should…

- lead cultural change from the top
- break down barriers between analytical, policy and finance functions
- deploy capacity adequately
- ensure clear ownership and accountability for forecast production and use (including assumptions)
- incentivise accurate and integrated forecasting through performance management systems
- monitor outturns to understand variance and improve forecasting

HM Treasury should…

…work with departments and relevant professional networks to support…

- development and promotion of forecasting advice
- establishment of cross-government, cross-profession thematic expert groups to share activities, data, assumptions and best practice

…work with Cabinet Office and the Finance Leadership Group to…

- address forecasting in its FM review
- promote guidance to senior managers and boards on challenging and using forecasts
- ensure the Major Projects Leadership Academy curriculum drives good forecasting practice

…strengthen how forecasts are challenged, by…

- working with NAO and Parliament to identify how to support informed scrutiny of departments' forecasts
- strengthening spending teams' ability to interrogate departments' forecasts

Questions

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