MATH6145 PRESENTING REPORTS

The Accounting, budgeting and fiscal impact of COVID-19 on the United Kingdom

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ABSTRACT

This paper analyzes the nature and impact of budgetary responses to the COVID-19 pandemic in the United Kingdom through the lens of the four modes of government accounting. It first examines the pre-pandemic strengths and weaknesses of UK public sector financial management, including achievements in accrual accounting and reporting but also marginalization of financial reports and politicized spending controls. The UK's dramatic fiscal interventions in response to the crisis are then evaluated, including massive spending programs like the Coronavirus Job Retention Scheme as well as tax deferrals. Under the Office for Budget Responsibility's central scenario, these measures are projected to increase the UK's budget deficit to around £322 billion (15.2% of GDP) and public debt to 104.1% of GDP in 2020-21. Potential longer-term consequences are explored, including soaring debt service costs, pressures for austerity and centralization, damage to financial reporting, fraud vulnerabilities from hasty program rollout, and challenges in restoring fiscal balance through future spending cuts or tax hikes. The analysis highlights tensions between budgeting and reporting practices, public health and economic priorities, and national and local responses amid the unprecedented fiscal impacts. Overall, the paper concludes that the pandemic has exacerbated the unsustainability of UK public finances in an environment already shaped by a decade of austerity policies and impending Brexit.

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1.1 INTRODUCTION

The COVID-19 pandemic has had a catastrophic impact on public health and economic activity globally. In the United Kingdom, the crisis has been particularly severe, with the country experiencing one of the highest per capita excess death rates in Europe and suffering a record 20.4% contraction in GDP during the second quarter of 2020. In response, the UK government has implemented dramatic budgetary interventions and fiscal support measures on an unprecedented scale not seen since World War II.

This scale of massive public spending increases and tax deferrals has delivered a seismic fiscal shock that will have profound and long-lasting impacts on the sustainability of UK public finances. The budget deficit is projected to reach £322 billion (15.2% of GDP) in 2020-21 under the Office for Budget Responsibility's central scenario. Public sector net debt is expected to surge to £2.2 trillion, or 104.1% of GDP, by the end of the current fiscal year - levels not seen in over half a century.

Understanding the nature, impacts and potential consequences of the UK's budgetary response to the COVID-19 crisis is therefore of critical importance from public finance, economic policy, and governmental accountability perspectives. This report provides a structured analysis examining the UK government's pandemic fiscal measures through the analytical framework of the four modes of government accounting: financial reporting, statistical accounting, budgeting, and long-term fiscal sustainability assessments.

Utilizing this multi-modal lens surfaces key tensions inherent in the UK's crisis response. These include prioritization of budgeting and economic statistics over financial reporting; balancing public health priorities against economic protections; the centralization of fiscal power versus constraints on local/devolved capacities; and the relegation of long-term fiscal sustainability concerns behind short-term pandemic demands.

By evaluating strengths, weaknesses, and pressures across these different modes of accounting for UK public finances, this report delivers insights into challenges that may shape governmental accounting, budgeting, and fiscal policymaking for years to come as a result of COVID-19's seismic impacts. It highlights how the pandemic has dramatically exacerbated pre-existing strains and unsustainabilities in UK public finances in an environment already shaped by a decade of austerity policies and the impending exit from the European Union.

1.2 LITERATURE REVIEW

The document analyzes the impacts of the COVID-19 pandemic on UK public finances and budgetary responses through the lens of four modes of government accounting: financial reporting, statistical accounting, budgeting, and fiscal sustainability reporting.

The authors first discuss the pre-pandemic strengths and weaknesses of UK public sector financial management. The strengths included impressive technical achievements in implementing accrual accounting and budgeting across government, aligned fiscal reporting (WGA) and budgeting systems, and pioneering work on long-term fiscal sustainability analysis. However, weaknesses included marginal engagement with financial reports, Parliamentary budget processes being more symbolic than substantive, politicized financial manipulation, and austerity policies subordinating performance management to expenditure reduction.

The paper then examines the dramatic increase in spending to fund programs like the Coronavirus Job Retention Scheme as well as tax deferrals in the government's pandemic response, leading to a projected budget deficit of around £322 billion and public debt rising to 104% of GDP in 2020-21 under the OBR's central scenario.

Looking ahead, the authors analyze potential consequences like soaring debt service costs, increased fraud risks from hasty program rollouts, pressure for austerity and centralization despite political resistance, delays in financial reporting, and major challenges in restoring fiscal balance through spending cuts or tax hikes post-recovery.

The review highlights tensions between the primacy of budgeting and statistical accounting over financial reporting, strategic tradeoffs between public health and economic priorities, national and local responses, and political pressures amid unprecedented fiscal impacts. Ultimately, it warns that the pandemic has worsened the unsustainability of UK public finances in an already-challenging environment shaped by a decade of austerity and impending Brexit.

1.3 DATA ANALYTICS AND OPERATION RESEARCH TECHNIQUES USED

1.3.1 Impact on UK Government Finances (David Heald, 2020)

- The pandemic significantly affected UK government finances. During the first three months of the crisis (April–June 2020), government receipts fell by 12%, while expenditures increased by 36% compared to the previous year.
- Government debt reached £1,984 billion (99.6% of GDP), the highest percentage since March 1961.
- In 2020–21, the pandemic is expected to have the greatest impact on UK public finances, resulting in a record budget deficit that may approach £322 billion. Public sector net debt could rise to £2,205 billion (104.1% of GDP)

1.3.2 Modes of Government Accounting (David Heald, 2020)

- The analysis considers four modes of government accounting. These modes help understand the financial impact and guide decision-making:
- Statistical Accounting: Dominates attention due to reporting speed and international comparability.
- Budgeting: Emphasizes timeliness.
- Financial Reporting: Marginalized during the pandemic but remains essential.
- Fiscal Sustainability Analysis: Warns that UK public finances are even more unsustainable post-pandemic.

1.3.3 Data Analytics and Decision-Making in Healthcare

- Forecasting and Trend Analysis: Data analytics techniques, including regression, classification, clustering, and Bayesian models, can be used to predict future behaviour based on historical data. For healthcare, this means forecasting health impacts, resource needs, and patient demand.
- Healthcare Burden Forecasting: AI and data analytics help estimate the burden on healthcare systems, including hospitalizations, ICU admissions, and resource allocation.
- Comorbidity Analysis: Identifying patterns and risk factors associated with COVID-19 severity using data analytics.

1.3.5 Practical Implications for Healthcare (Funk S, 2020)

- Timeliness: The pandemic underscores the importance of timely financial reporting and healthcare data analysis.

- Fiscal Transparency: Despite challenges, maintaining transparency in government financial reporting and healthcare data sharing is crucial.
- Debt and Interest Rates: Higher debt levels combined with future interest rate increases may impact healthcare funding and resource allocation.

1.3.6 Forecasting Healthcare Burden Metrics (Mieke Deschepper, 2020)

- Efforts between March and July 2020 aimed to produce short-term forecasts for COVID-19 in the UK to inform healthcare planning.
- Ensemble forecasts combining 11 models from 6 institutions' predicted metrics like ICU beds occupied, new admissions, and deaths.
- Both individual and ensemble forecasts were evaluated, with ensemble forecasts generally performing as well or better than individual models.

1.3.7 Planning Tool Development

- A planning tool integrating a Poisson model for new COVID-19 admissions and a multistate model for patient transitions was developed.
- The Poisson model predicts new cases over 10 days, while the multistate model estimates transitions between hospital wards.
- Monte Carlo simulations forecast patient transitions and new admissions, aiding in predicting required bed capacity.

1.3.8 ED Attendance Patterns Post-Lockdown (Michaela A. C. Vollmer, 2021)

- Analysis at Imperial College Healthcare NHS Trust showed a 35% decrease in ED attendance after the lockdown, mainly driven by younger age groups and non-ambulance arrivals.
- Attendances for serious conditions dropped significantly, but mortality risk for non-COVID admissions remained unchanged.

1.3.9 Digital Transformation in Healthcare (Hutchings, 2020)

- Rapid adoption of technology in the NHS, driven by necessity and national actions, facilitated remote consultations, contact tracing, and increased uptake of remote health services.
- While transformative, challenges like impact on clinical practice and workforce need addressing for sustainable progress.

1.3.10 Fiscal Impacts and Policy Responses (David Heald, 2020)

- COVID-19 led to severe fiscal impacts in the UK, with significant increases in government spending and debt levels.

- Major fiscal responses included job retention schemes, business grants/loans, and increased public services spending.

1.3.11 Testing, Tracing, and Isolation Strategies (West, 2023)

- UK's testing strategy expanded from PCR tests to rapid lateral flow tests, with emphasis on contact tracing and financial support for isolation.
- The NHS Test and Trace system integrates technology and human tracers to identify and advise close contacts.

1.3.12 Data-Driven Patient Allocation Model (Sobhan Sarkar, 2021)

- A data-driven optimization model was developed to allocate patients to hospitals based on capacity, severity, and travel time.
- The model, utilizing various data sources and advanced algorithms, aims to improve healthcare outcomes through efficient resource allocation.

1.3.13 Role of Big Data Analytics in Pandemic Control (Shikah J. Alsunaidi, 2021)

- Big data analytics played a vital role in contact tracing, predictive modelling, healthcare resource management, public health surveillance, vaccine distribution, and behavioural analysis.
- These analytics enabled informed decision-making and targeted interventions to mitigate virus spread and protect public health.

1.4 SUMMARY

The COVID-19 pandemic has had a profound impact on UK government finances, with significant shifts observed in government receipts and expenditures during the initial three months of the crisis (April–June 2020). During this period, government receipts decreased by 12%, while expenditures surged by 36% compared to the previous year. Consequently, government debt soared to £1,984 billion, representing 99.6% of GDP, the highest level since March 1961. The fiscal implications of the pandemic are expected to be most pronounced in 2020–21, with projections indicating a record budget deficit potentially reaching £322 billion, and public sector net debt climbing to £2,205 billion, equivalent to 104.1% of GDP. The analysis considers four modes of government accounting—statistical accounting, budgeting, financial reporting, and fiscal sustainability analysis—to comprehend the financial impact and guide decision-making processes effectively.

In the realm of healthcare, data analytics plays a crucial role in informing decision-making processes and forecasting healthcare burden metrics. Techniques such as regression, classification, clustering, and Bayesian models enable forecasting of health impacts, resource needs, and patient demand based on historical data. Specifically, AI and data analytics aid in estimating the burden on healthcare systems, including hospitalizations, ICU admissions, and resource allocation. Additionally, data analytics facilitate comorbidity analysis, identifying patterns and risk factors associated with COVID-19 severity.

Practical implications for healthcare underscore the importance of timeliness in financial reporting and healthcare data analysis, particularly in the context of the pandemic. Despite challenges, maintaining transparency in government financial reporting and healthcare data sharing remains crucial. Moreover, higher debt levels combined with potential future interest rate increases may impact healthcare funding and resource allocation, highlighting the need for proactive measures to address financial challenges.

Efforts between March and July 2020 aimed to produce short-term forecasts for COVID-19 in the UK to inform healthcare planning. Ensemble forecasts combining 11 models from 6 institutions predicted metrics such as ICU beds

occupied, new admissions, and deaths, with generally favourable performance compared to individual models. A planning tool integrating a Poisson model for new COVID-19 admissions and a multistate model for patient transitions was developed, incorporating Monte Carlo simulations to aid in predicting required bed capacity.

Analysis at Imperial College Healthcare NHS Trust revealed a 35% decrease in ED attendance after the lockdown, with attendance for serious conditions dropping significantly, albeit with unchanged mortality risk for non-COVID admissions. The rapid adoption of technology in the NHS, driven by necessity and national actions, facilitated remote consultations, contact tracing, and increased uptake of remote health services, albeit with challenges in workforce and clinical practice impacts.

COVID-19 prompted severe fiscal impacts in the UK, leading to significant increases in government spending and debt levels, countered by major fiscal responses including job retention schemes, business grants/loans, and increased public services spending. The UK's testing strategy expanded from PCR tests to rapid lateral flow tests, with a focus on contact tracing and financial support for isolation. A data-driven optimization model was developed to allocate patients to hospitals efficiently based on capacity, severity, and travel time, aiming to improve healthcare outcomes. Big data analytics played a crucial role in pandemic control, facilitating contact tracing, predictive modelling, healthcare resource management, public health surveillance, vaccine distribution, and behavioural analysis to mitigate virus spread and protect public health.

1.5 REFERENCES

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