POLICY BRIEFING: INVESTIGATING THE COMPLEXITY OF PUBLIC PROJECTS

Title: Investigating the Complexity of Public Projects
Authors: Daniel Rogger (University College London and Institute for Fiscal Studies)
Contact information: d.rogger@ucl.ac.uk

*I. **Policy Motivation for Research:** the policy and research question(s) addressed by this project, and a brief explanation of why they are crucial for policy-making in targeted countries*

Understanding why public projects succeed or fail is crucial to understanding the effectiveness of government policy. In Nigeria, roughly 40% of Federal Government projects are not completed. Is this because they are not politically important enough, the money for the projects is stolen, or the government doesn't have the capacity to implement them?

One answer is that the complexity of the project determines whether it will succeed or fail. We define complexity in a range of ways, but one can broadly think of it as the complications arising from the physical implementation of a proposed scheme of work. For example, some projects may simply be a larger scale than others (structural complexity). In others, production may involve uncertainties (temporal complexity), ambiguous risks (technical complexity), or to the potential for preferences over the project to diverge (directional complexity). Thus, complexity can cover both technical and political components of a project.

By understanding what aspects of a project are determining its success or failure, policymakers are able to design more effective mechanisms for implementation. For example, where the private sector is weak and the project complex, policymakers may redirect funding towards more centralised organisations able to draw on wider expertise.

Complexity considerations have been largely absent in research to date. Typically researchers have ignored the possibility that some public projects fail simply because they are more difficult to implement than others. Abstracting from questions of complexity may lead to significant endogeneity issues when analysing organisational design issues such as decentralisation.

By funding research into defining how 'complex' a project is, and gaining data on it from a developing country context, the International Growth Centre has tried to bring the complexity of government projects into a more manageable, analysable, form. These concepts will provide officials working on budgeting and evaluation in developing countries a lens with which to better manage complexity.

*II. **Policy Impact:** what decision or policy will be shaped as a result of this work*

The work investigates the distribution of complexity across 5000 projects implemented by social sector organisations of Nigeria's Federal Government and the success of those organisations in implementing projects of different levels of complexity. This provides an assessment of which organisations are most effective at dealing with complexity of different types, and under what conditions.

Thus, policies that determine the distribution of projects across organisation will be the target policy for this research. Such policy choices will also determine the funds required to implement the projects, such as those for staffing and training. There are clear interactions between complexity, organisational choice, human resource management, and financing.

Continuing with the decentralisation example given above, complex projects may be best provided by state governments when the private sector in that state has sufficient capacity, but by the Federal Government institutions when required equipment is not available. Thus, where the private sector is strong, provision should be made for relevant staffing and training to implement the project at the state government level. Otherwise, these resources should shift to the Federal Government.

*III. **Audience:** the audience or key decision makers targeted by this brief*

- Budget officials, particularly those working on sector strategy and funding
- Monitoring and evaluation officials
- Academics working on public organisational design

Main sections:

*IV. **Policy Implications:** Identify the key messages on the policy implications of your research in bullet point form. Please use one sentence providing a brief description of each bullet together with one paragraph that accompanies each bullet to substantiate or explain further the bullet.*

- **The complexity of a public project matters for the effectiveness of its implementation**

Public projects vary widely in their complexity (see fig.1. which displays the distribution of an aggregated complexity indicator). The complexity of projects varies widely across projects within an organisation. It also varies widely across different types of organisation. Relating our analysis to decentralisation, complexity matters much more for implementation at the most centralised tiers of government.

- **Different types of project complexity matter to different types of organisations**

Different measures of complexity are more influential in different types of organisation, for example at different tiers of government. This implies that some organisations are better at handling certain types of project than others. Whilst further investigation is needed, this might have significance for which projects should be handled by which type of organisation.

- **Complexity impacts on some project types more than others**

Some types of projects are far less sensitive to their level of complexity than others. Thus, for some types of project (building projects or distributing microfinance for example), the degree of complexity is an important determinant of the final outcome. For other projects (such as the construction of dams), the degree of complexity is far less important a determinant of success.

*V. **Implementation:** Please provide guidance for policymakers as to how to implement policy measures based on the implications of your research by devising a number of 'action points'. Please discuss constraints that could arise in the implementation of these 'actions points' and suggest ideas on how to confront those. If applicable, please also discuss issues in replication of results, or in scaling up, or any cross-country experience, that arise in thinking about implementing decisions that would be influenced by your research.*

- **ACTION POINT: Incorporate project complexity considerations into the Medium Term Sector Strategy process**

By utilising complexity indicators in medium term sector planning, they will focus the budgeting process around the heterogeneous needs of projects. This will not be solely in terms of financial requirements, but the human resource, logistical, and managerial requirements. Such a focus will root budgeting in the specifics of project implementation and reduce the capacity for inefficiencies in the budget process.

Constraint: Understanding by sector officers of indicators of complexity that are applicable to sector and relevant for comparison between sectors.
Confront: Have inclusive development of complexity indicators with sector officers relevant to budgeting process.

- **ACTION POINT: Utilise project complexity considerations in monitoring and evaluation frameworks**

Project complexity is at the heart of the success or failure of projects. By including complexity indicators in project monitoring and evaluation, the analyst will gain a greater sense of the mechanisms behind why a project has failed or succeeded (overcome great complexity). This will enhance the learning process around the evaluation.

Constraint: Poor alignment of complexity indicators best-suited to budgeting and those best-suited to monitoring and evaluation.

Confront: First, involve evaluation staff in the definition of planning/budgeting complexity indicators. Second, have evaluators collect data on both those indicators suitable for budgeting and those suitable for evaluation.

- **ACTION POINT: Utilise an organisation's capacity to deal with complexity as another margin of success**

Organisational success in the public sector is often judged by project completion rate. By abstracting from the complexity of projects, we ignore potential best-practice in project management. National planning organisations should investigate best-practice in organisational management by assessing those institutions best able to engage with complex projects.

Constraint: Limited capacity for research at national planning organisations for innovative research.
Confront: Provide a simple assessment tool that outlines issues in complexity and organisational design.

*VI. **Dissemination**: Please suggest individuals or institutions, along with emails and/or postal addresses that you would like the IGC to send soft and hard copies of your final working paper and policy brief. Ideally, we would like to disseminate IGC findings to those in the policymaking community in developing countries in Africa and South Africa.*

Dr. Bode Oyetunde, Technical Assistant to the Director General of the Budget Office, The Budget Office, Federal Ministry of Finance, Abuja, Nigeria (bodeoyetunde@yahoo.com)

Minister for National Planning, The National Planning Commission, Plot 421 Constitution Avenue, Central Business District, Abuja, Nigeria

Monitoring and Evaluation Unit, The National Planning Commission, Plot 421 Constitution Avenue, Central Business District, Abuja, Nigeria

Senior Special Assistant to the President on Millennium Development Goals, The Presidency, Abuja, Nigeria

*VII. **Further Readings**: a brief (non-technical) list of related writing.*

To find out more about the concept of complexity in project management and engineering, see Remington and Pollack's 'Tools for Complex Projects' (2007). The coding guidelines, a review of the process by the coding engineers, and other details will be available at http://www.ucl.ac.uk/~uctpdro/publications.html.