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Understanding the Drivers of Food Choice to Improve Population Nutrition: An Application of Economics to Public Health

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There is much to learn about what shapes people's food choices, particularly in countries with a high burden of malnutrition. Whilst public health policymakers and practitioners in many countries seek to address malnutrition, including through for example in Malawi with improving national food production via large-scale agricultural input subsidy programmes, there are significant gaps in the understanding of people's food choices and trade-offs including in the context of such policy interventions. Considerable insight into research of the drivers of food choices and trade-offs can be gained from both the conceptual perspectives and applied methodological techniques that are offered by the discipline of economics. Here, we describe our current research, an example of the use of conceptualisations and methods from economics to explore drivers of food choice to improve population nutrition in the context of Malawi's FISP.

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1. Introduction

Malnutrition in all its forms is a critical topic in the discipline of public health, as it underpins challenges to population health, and has important implications for social and economic development. This importance is recognised in Sustainable Development Goal (SDG) 2 which aims to "end hunger, achieve food security and improved nutrition and promote sustainable agriculture" (United Nations, 2020), and 2016-2025 being the UN Decade of Action of Nutrition, which seeks to accelerate action to achieve the SDGs. A substantial and growing body of literature exists on food and nutrition, including in the sub-Saharan African region, and in Malawi (c.f. (Sassi, 2012, Aiga et al., 2009, Wilford et al., 2012, Kumchulesi, 2018, Cornia et al., 2016)), the country of focus here. However, there remains considerable scope for further work to address malnutrition, despite existing work having been undertaken from a variety of disciplinary and methodological perspectives. Importantly, such future research to strengthen the understanding of malnutrition and its determinants and guide more effective nutrition policymaking could usefully draw on methods and approaches from the discipline of economics.

Many public health problems are to a large extent shaped by the more macro-level ways in which societies are organised – the 'structural' and political determinants of health, which in turn shape the social determinants of health, defined by the World Health Organization as 'the conditions in which

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people are born, grow, live, work and age' (World Health Organization, 2008). These determinants shape, for example, the system of food production, distribution and consumption, as well as people's food choices and nutritional status, by shaping the ability of people to interface with local food environments through, for example, impacts on wages and income affecting food affordability (Turner et al., 2018). Thus, as well as institutional, political, and social factors, economic factors are important drivers of health outcomes – relating to research within the economic discipline regarding the relationship between economic growth and population health and welfare. Some scholars consider there to be strong evidence of a positive relationship between the two, while others point to what they see as a far more complex set of pathways and relationships (O'Connell and Smith, 2016, Dollar, 2001, Filmer and Pritchett, 1999, Pritchett and Summers, 1996, Barro, 2013, Tharamangalam, 2010).

These are undoubtedly important areas of study, as also evidenced by the considerable body of research in the area. However, in addition to supporting such important research on the influence of economic factors on health outcomes, the discipline of economics also provides useful conceptualisations and methodological techniques to investigate public health problems themselves aside from the investigation of economic indicators on health and welfare. Here, we present an example of the use of conceptualisations and methods from economics to explore drivers of food choice to improve population nutrition, in the context of the influence of a prominent agricultural input subsidy programme, Malawi's Farm Input Subsidy Programme (FISP).

2. Malnutrition – and food choice – in Malawi

The factors interacting to shape nutritional status include aspects of the wider social, economic and political context, but also factors much more proximal to the household and individual, including dietary diversity, a measurement of dietary quality, and dietary quantity (Reinhardt and Fanzo, 2014, UNICEF, 2013). These proximal drivers of nutritional status, also often considered proxy measures of nutritional status, relate to micronutrient deficiencies as well as to hunger and food insecurity, and pose a significant public health burden in Malawi, as well as underpinning challenges to social and economic development.

According to Malawi's National Statistical Office (2017), about 54% of Malawian households (58% in rural areas) are considered to have 'very low food security' (NSO (National Statistical Office), 2017). At the same time, diets in Malawi largely remain undiversified, with maize dominating consumption as well as policy interventions – yet a diet reliant so predominantly on maize lacks essential nutrients important for health (Nuss and Tanumihardjo, 2010, Schonfeldt and Gibson Hall, 2012). This burden of malnutrition is also evident from national figures on the nutritional status of children. In 2015/16, for example, 37% of Malawian children below the age of five were stunted or chronically malnourished, 3% were wasted and 12 % were underweight. Only 25% of children aged 6-23 months old were considered to have minimum dietary diversity (NSO; ICF, 2017).

These statistics emphasise the importance of improving understanding of the factors shaping food systems and nutritional status in a country such as Malawi (HLPE, 2017, Walls et al., 2019), including people's food choices and trade-offs (Sobal and Bisogni, 2009). Policy makers in Malawi are actively seeking to address these issues, as exemplified, for example, by the recent (2018) release of Malawi's national nutrition policy (Government of Malawi Department of Nutrition HIV and AIDS, 2018), and a substantial history of policies aimed at improving national food production, including the Farm Input Subsidy Programme (FISP) – which, in addition to promoting maize, also promoted legumes (Chirwa and Dorward, 2013)- and the more recent Affordable Inputs Programme (AIP). However, significant knowledge gaps remain in this area.

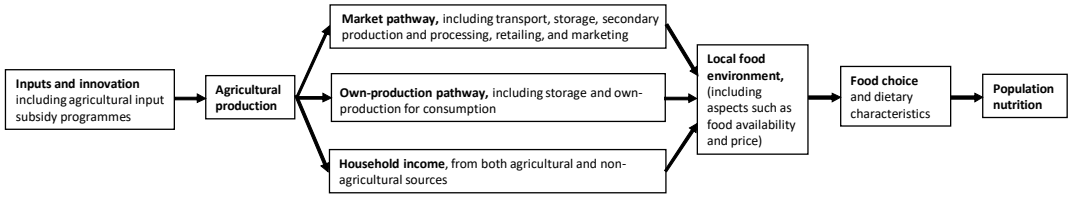
3. Current research

Our current research, undertaken in the context of Malawi's FISP and its impacts in rural communities, is an example of the use of methods from economics to explore drivers of food choice to improve population nutrition.

Malawi's FISP, implemented between 2005 and 2020, aimed to support agricultural productivity and increase smallholder farmer incomes (Chirwa and Dorward, 2013). Through these pathways, the FISP assumed flow-on benefits to national food security and nutrition. The FISP was administered through vouchers that enabled eligible households to purchase fertiliser and seeds at reduced prices (Snapp and Fisher, 2015, Dorward and Chirwa, 2011, Karamba, 2013). It underwent considerable change over its duration (Harman et al., Unpublished, Chirwa and Dorward, 2013), and at times had up to two-fifths of the country's population as direct beneficiaries (Arndt et al., 2015). It initially provided subsidies on improved maize seeds and fertilizers, but after 2008 was extended to include legume seeds (groundnuts, beans, soy beans and pigeon peas) (Chirwa and Dorward, 2013). With agricultural input subsidies generally, there is contention regarding impacts on a range of pathways, including as shown by two of the authors (DJ, HW), about the impact of such agricultural input subsidies on nutrition and related health (Walls et al., 2018). With the FISP, several studies, including a review by ourselves (Walls et al., 2018) have shown some small minimal impact of the FISP on nutritional outcomes. However even so with the FISP, and studies of agricultural input subsidy programmes on nutrition more generally, findings are often limited and somewhat inconclusive – with a need for more, and more rigorous, research in this area, including relating to a wider more contextual understanding (Walls et al., 2018, Carletto et al., 2015; Matita et al. 2021).

Figure 1 depicts diagrammatically some of the key relationships of interest here. Agricultural production is influenced by agricultural inputs and innovation, including agricultural input subsidy programmes such as the FISP (Kanter et al., 2015, Pandey et al., 2016). The resulting crops can follow a 'market pathway' involving transport, storage, secondary production, and processing, retailing and/or marketing, or an 'own-production pathway' whereby the foods are consumed by those who grow them. Agricultural production also has an influence on household income. The market pathway, own-production pathway, and changes to household income each influence aspects of local food environments such as food availability and price, with implications for food choice and dietary characteristics, and ultimately, nutrition and health status.

Figure 1: Simple Conceptual Framework of Key Relationships between Agricultural Input Subsidy Programmes, Food Choice and Population Nutrition



Note: Many important influences including related to the wider social, political, and economic context have not been included in the framework. Some of these, such as societal gender norms and inequity, for example, act on multiple points across the framework.

Examining population nutrition in the case of agricultural input subsidies involves exploration of dietary diversity including consumption of subsidized and non-subsidised crops. Particularly important is an understanding of price elasticities, with a key area of contention being the impact of a lower price of maize on wider food choice. A lower price of maize in Malawi due to the FISP could mean people consume more maize, or could enable greater expenditure on other products, including a greater diversity of food products, and resulting substitution patterns may reinforce or undermine the direct impact of a price (Green et al., 2013, Cornelsen et al., 2014), consistent with consumer theory in economics. Our current work helps to address this knowledge gap, through using changes in price as a proxy for the impact of the FISP on food choice and dietary diversity, and drawing on market survey data and discrete choice experiment methodology.

As observed by Harman et al. (unpublished), there has also been little qualitative work undertaken of Malawi's FISP to help understand the context for any quantitative findings, including impacts on nutrition and related health. Thus, and as we have done in our research, quantitative analysis examining impact and food choices and trade-offs, drawing on methods and understandings from economics, can be usefully paired with approaches from other disciplines including qualitative approaches to understand the wider context of the quantitative results. Such qualitative approaches can include, for example, semi-structured interviews, focus group discussions, and household and individual surveys. Dietary and food security assessment are also relevant here.

In our research, we took a mixed-methods approach that enabled us to triangulate the results from various data sources and analyses, to develop an in-depth understanding of FISP impact on dietary diversity in rural Malawi and the context for this. We collected our data through: (1) household and individual surveys; (2) market surveys; (3) focus group discussions; (4) semi-structured key informant interviews; and (5) a discrete choice experiment. We also drew on official government market data, sourced from the Ministry of Agriculture, Irrigation and Water Development.

The district-level data were collected from villages in rural areas of Lilongwe District, close to the capital city Lilongwe in central Malawi, and Phalombe District, a more remote region of southern Malawi. The district-level data were collected at two-time points, the post-harvest season of May 2017, and the lean season of February/March 2018. In each district, random selection was used to identify four enumeration areas in one Traditional Authority. Multistage sampling was used to identify study respondents. We collected survey data from 400 randomly selected rural households (200 in each district), conducted 16 focus group discussions (separately with groups of men and women), and undertook several market surveys. We also conducted the discrete choice experiment in the second round of data collection with a subset of the 400 households initially surveyed (180 households in total, 90 in each district). The semi-structured key informant interviews, 24 in total, were undertaken with national government officials as well as representatives of non-governmental organisations, at district level with district council representatives and also with village chiefs in the study areas.

Undertaking this approach has provided us with the ability to:

- examine the impact of Malawi's FISP on various nutrition-related end points, including on more traditionally economic pathways for example through changes in purchasing

patterns, using seasonal peaks and troughs in food prices as proxies for this impact and drawing particularly on the survey data;

- examine the FISP impact by taking a political economy perspective, drawing particularly on stakeholder perceptions of the impact of the FISP on food choice and dietary diversity and the context for this, including problems with the policy design and implementation;
- examine household food purchase preferences and trade-offs (consumption responses) based on different maize price scenarios, using data from the discrete choice experiment.
- examine other correlations in key indicators collected, for example related to food market participation, household food security and seasonality.

Studying drivers of food choice and population nutrition in the context of food price changes and broader government policy has many data and methodological challenges. Notwithstanding the study limitations, reflected on in our forthcoming empirical papers, together, our novel combination of methodological approaches has enabled us to examine the relationships between the FISP, nutrition and health outcomes and the wider context of these impacts and in doing so build and extend on previous studies.

4. Conclusion

The understanding of what drives people's food choices, dietary characteristics such as dietary diversity, and nutritional status, whilst improving over time, is still fairly limited. This is particularly problematic in countries such as Malawi with a significant burden of malnutrition in all its forms and associated food system challenges (Walls et al., 2019), and a critical need for policymakers to act to address this. Whilst economic factors are important drivers of health outcomes, including nutritional outcomes, the discipline of economics also provides useful conceptualisations and methods that can assist with understanding key issues in public health, including both the quality of people's diets and the drivers of this. There is a large body of literature available to guide policymaking for improved nutrition in low-income contexts, including regarding nutrition in Malawi. However, there is also considerable scope and need for further research and a better understanding of the drivers of food choice and population nutrition in countries such as Malawi, including research that draws upon conceptualisations and methods from economics.

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