

# Food Security Policy Impact Analysis

## Citation for published version (APA):

Abuelhaj, T. (2018). *Food Security Policy Impact Analysis: The Econometrics of Cash and Food Assistance Cost Effectiveness*. Boekenplan. <https://doi.org/10.26481/dis.20180619ta>

## Document status and date:

Published: 01/01/2018

## DOI:

[10.26481/dis.20180619ta](https://doi.org/10.26481/dis.20180619ta)

## Document Version:

Publisher's PDF, also known as Version of record

## Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

## General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

[www.umlib.nl/taverne-license](http://www.umlib.nl/taverne-license)

## Take down policy

If you believe that this document breaches copyright please contact us at:

[repository@maastrichtuniversity.nl](mailto:repository@maastrichtuniversity.nl)

providing details and we will investigate your claim.

## 8. Summary

Governments traditionally played a major role in maintaining national food security (Pinstруп-Andersen, 1988). However, over the past few decades, national food assistance schemes have witnessed a profound transformation. Universal, untargeted food consumption subsidies were deemed an inefficient use of resources (Pinstруп-Andersen, 1988; FAO, 1994) and were argued to distort markets, induce disincentives for agricultural production and private sector food trade and suffered inefficiencies in their public sector managed supply chains (del Ninno, Dorosh, & Subbarao, 2007).

International food aid has also witnessed significant transformations during the past two decades. Until the late 1990s, international food aid was largely limited to a system of in kind food donations from donor countries with agricultural surpluses to recipient countries experiencing chronic or acute food deficits (Barrett & Maxwell, 2005). However, the scarcity of in kind food donations led in kind food aid to become increasingly limited to acute humanitarian emergencies. Traditional food aid donors have become increasingly flexible with more donors willing to donate funds rather than food commodities to address the worlds acute and chronic food insecurity. This flexibility offered WFP and other multilateral food assistance agencies the opportunity to rely more on markets closer to the recipient population for the procurement of food and procurement from small scale farmers.

One consequence of these changes in national and international food assistance is the blurring of the lines between the role of traditional food assistance schemes and the ‘new social protection agenda’ which is dominated by social transfers, with cash transfers increasingly displacing food assistance (Devereux, 2009). This, along with the increased reliance on cash and vouchers by

multilateral organizations, has led to the recognition that social protection systems and food assistance programs serve overlapping goals (Devereux, 2016).

However, the relative merits of cash and food transfers as food assistance mechanisms and the unique impacts that each may bear are not fully understood. Often, cash is simply considered to be the more efficient and cost effective transfer modality, particularly in the presence of functioning markets. Most response analysis tools and processes applied by international aid organizations almost automatically prescribe cash transfers in the presence of functioning markets, whereas specialized organizations with specific food and nutrition security mandates such as WFP, FAO and ACF only advocate ‘considering’ cash or a combined cash and food transfer.

This thesis explores the relative merits of cash and food transfers in enhancing wellbeing and macro and micronutrient consumption. Though all collectively contribute to the overall research domain of this dissertation, the chapters of the dissertation are distinct studies, each addressing distinct empirical research questions using survey data collected in Iraq. Chapter 2 explores the challenge of estimating the value of food assistance, focusing on the appropriateness of respondent-estimated market price opinion data of rationed and subsidized commodities.

This chapter concludes that price opinions of subsidized food commodities do not necessarily reflect market conditions and are influenced by the importance of the subsidy in the household economy – a reflection of household welfare levels and preferences. Additionally, respondent price opinions of subsidized commodities – and by extension the transfer value of the subsidy – decreases with increased income. This is argued to have a biasing effect on welfare analysis. The choice of price data leads to different trends in the growth of consumption expenditure and poverty over time. The results of the estimation models indicate that the transfer value from subsidized commodities, on the whole, decreases with increased

income and with increased market prices, thus counteracting any increase in income and artificially deflating consumption expenditure.

Chapter 3 focuses on empirical evidence on the nutritional cost effectiveness of cash versus food transfers as part of food assistance programmes, utilizing existing evidence mainly from the United States, but also from Bangladesh and Zambia, and contributes additional empirical evidence from the Iraqi context. Specifically, this chapter explores the evidence on the differences in consumption responses following a food or a cash transfer and how that difference can be employed to measure the ex-ante cost effectiveness of cash and food transfers.

By expressing the marginal propensity to consume food due to food assistance in terms of income demand elasticity, this chapter finds a remarkable reduction in variability of estimates found in 16 published studies, clustering the estimates close to the mean food assistance elasticity equal to unity. Estimating the same using data from Iraq produces a food assistance demand elasticity approximately equal to unity (1.03). This chapter concludes that households generally leave the food budget share unaltered following a food the transfer, in contrasted to an increase in regular cash income, or expenditure, where the food budget share generally decreases with rising income in accordance with Engel's law. This is further utilized to suggest a stylized approach to undertake ex ante comparative cost effectiveness analysis of cash and food assistance.

Chapter 4 applies quantitative food demand modelling approaches to investigate the dynamics of demand for food and nutrients in the presence of food consumption subsidies. This chapter estimates and discusses the parameters of a complete food demand system for Iraq – the first of its kind for Iraq or any other Arab State. The food demand system estimation follows a three stage budgeting approach, allowing the estimation of expenditure and own and cross price demand elasticities for 42 food commodities and commodity groups. First stage demand parameters are estimated through a Working-Leser model and the second and third stages are estimated using the

Quadratic Almost Ideal Demand System (QUAIDS) adjusted to account for demographic scaling and censored expenditure data. Subsidized food commodities are valued at their virtual prices estimated as the derivative of the cost function specified in the Normalized Quadratic mixed demand model. Furthermore, expenditure and price elasticities of demand for eight macro and micro nutrients are estimated to allow the assessment of nutrient intake responses due to price and income shocks.

Most commodities are estimated to be normal goods with positive expenditure elasticities, though less than unity, while some commodities, such as Commercial Vegetable Oil, Commercial Sugar, Mutton, Beef and Milk are considered superior goods with positive expenditure elasticities higher than unity. The model results reveal that subsidized, ration rice and commercial wheat flour are considered inferior goods. The estimated price elasticities indicate substantial price responsiveness of demand for commercial food subgroups including rice, wheat flour, sugar, and breads and buns among others.

The model also identifies giffen behavior in relation to subsidized, rationed rice with a negative expenditure elasticity and a positive own price elasticity. This echoes the results of other published works that identify giffen behavior in relation to subsidized rice in Urban china. This suggests that giffen behavior may be common for subsidized staple foods, which has significant implications for policy analysis assessing the impacts of eliminating food subsidies.

Chapter 5 applies microsimulation methods to assess the expected impacts of food consumption subsidy reform on welfare and food security and explores the comparative cost effectiveness of alternative transfer modalities such as cash and food vouchers. This chapter relies heavily on the food and nutrient elasticities estimated in Chapter 4 as well as the findings of Chapter 3 on the differential consumption responses to a food and cash transfer.

In this chapter, the distributional, welfare and food security impacts of eliminating Iraqi food consumption subsidies are estimated where

welfare effects are captured through Compensating Variation and simulated poverty headcount index and food security effects are captured through the simulated change in macro and micronutrient consumption and simulated prevalence of undernourishment.

Lifting food consumption subsidies are simulated lead to a 24 percent rise in the cost of living resulting in a 30.5 percent fall in welfare relative to average pre-reform welfare levels as measured by Compensating Variation (CV), though the effects are felt more intensely by the poorer segments of Iraqi society as the poorest decile is expected to experience a 48 percent loss of welfare.

Average calorie consumption is simulated to fall from 3,065 to 2,607 kilocalories per person daily. However, the effects of eliminating subsidies on nutrient consumption is most pronounced for micronutrients among members of the poorest deciles where the consumption response is characterized by a large shift in consumption away from expensive micronutrient rich foods towards the relatively cheaper calorie rich foods. Simulation presented in this chapter indicate that eliminating subsidies would increase the prevalence of undernourishment from 4.8 percent up to 13.3 percent if the reform process is unaccompanied by any mitigation measures. Similarly, poverty is simulated to rise from 19.8 percent to 39.4 percent nationally following the elimination of subsidies.

The ex-ante cost effectiveness analysis performed in this paper confirms that value based food vouchers are 21 percent more cost effective than cash transfers in improving consumption of both macro and micro nutrients. In addition, simulations presented in Chapter 5 indicate that a poverty targeted food voucher or a cash transfer equal to the amount suggested by the Compensating Variation reduces post subsidy elimination undernourishment from 13.3 to 6.2 percent, which is higher than the baseline prevalence. In contrast, the same cash transfer scheme is simulated to completely reverse the rise in the national poverty rate, returning the national prevalence from the high of 39.4 percent following the elimination of subsidies down to 19.5 percent, which is equal to the baseline prevalence.

The results presented in Chapter 5 suggest that, on aggregate, the monetary measure of welfare loss due to eliminating food consumption subsidies can be far larger than the cost of maintaining them. This raises questions on the efficiency of replacing universal subsidy schemes with targeted cash or food voucher transfer schemes. In addition, the chapter concludes that mitigation schemes that may be effective in reversing the poverty effects of eliminating food consumption subsidies are not necessarily sufficient to reverse the resulting rise in undernourishment. For Iraq, the elimination of subsidies and the compensation of the poor with a cash transfer or a food voucher transfer can result in an Iraq that is no less poor, though generally more food insecure.