



# Calories, conflict and correlates: Redistributive food security in post-conflict Iraq



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## ABSTRACT

War-torn Iraq manifests itself as an ideal laboratory for food-policy experimentation due to availability of unique data surrounding intra-household calorie consumption and the presence of selected correlates including, but not restricted to, substantial disruptions to social infrastructure and fundamental public-policy intervention. Among other findings, expenditure elasticities are mostly positive and dramatically curvilinear with respect to wealth; and lump-sum redistribution of *The Iraqi Public Distribution System* emerges as a feasible policy intervention. Extensions are discussed.

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## 1. Introduction

The availability of unique data (16,749 records detailing per-capita calorie consumption in Iraq, 2007–2008); substantial disruptions to social infrastructure (incessant military conflict since the 1980s); and the presence of substantial public intervention in food distribution (the so-called ‘*Public Distribution System*,’ 1990–); make ideal, war-torn Iraq as a setting for food-policy social experimentation. We report results of econometric evaluation of the sensitivities of calorie intake to a number of important correlates conjectured to condition intake; make recommendations concerning the disbandment of *The Public Distribution System for Food Products*; and suggest potential avenues for enhanced understanding of calorie consumption, generally; and future policy evaluation, specifically.

Our primary objective is to dissect the responsiveness of Iraqi calorie demand across a multitude of correlates and assess the overall impacts of policy intervention in the face of significant instabilities arising as a result of military incursion. Motivations stem, primarily, from three fronts. One source is an ever-expanding literature on food, food intake, calorie demand, and econometric evaluations of these features of the agricultural-food-systems environment; the second motivation stems from desire to contribute, empirically, to this expanding intellectual capital; and the third motivation stems from the uniqueness of the data at hand for making this contribution. During the sample period (2007–2008), extraneous features of the food-security environment engender contextual implications rendering the data further unique.

That the Iraqi economy faces many challenges is, perhaps, an understatement. In addition to international conflict, internal pressures have slowly emerged and contributed to an ‘impeding aggregate.’ The war against its Kurdish people (lasting more than four

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decades); the Iran-Iraq War (lasting some eight years, 1980–1988); the first Gulf War (August 1990–February 1991); the second Gulf War (commencing 2003); sporadic insurgency (commencing during the 2003 invasion, but intensifying, throughout various periods since then); and 'Daesh' protagonism (sporadically since 2003, but especially since 2014) contribute to rather dramatic cumulative impediments to transacting in private, domestic markets. Food markets, while arguably of greater importance than other domestic markets, are not immune to major disruptions.

Despite Iraq's potential prosperity arising from its rich natural-resource base, concerns abound about food security; food security's relations with income generation; and the ongoing, ever-present desire for mitigating poverty and alleviating the burdens brought about by conflict, and mismanagement of social infrastructure. Relatively speaking, but especially in consideration of neighboring, middle-eastern states, Iraq is richly endowed with abundant natural and human resources. Iraq is also endowed with significant agricultural resources. More specifically, and by most quantifiable standards, Iraq should be able to sustain food supply for its population. For example, historically, Iraq was deemed self-sufficient in producing cereal grains during the middle part of the previous century. And as recently as the late 1950s (Edirisinghe, 2004), Iraq was deemed able to amount 'surpluses.' However, this situation endured dramatic erosion. Agricultural output decreased substantially between 2000 and 2010; a surprisingly rapid subsidence, due to the fact that farm prices more than doubled between the years 2001 and 2008 (Central Organization for Statistics and Information Technology, Iraq, 2009).

Conflict and the instabilities it engenders, has had dramatic impact on the agricultural and rural landscapes. However, viewed, historically, decline was set in place considerably prior to the 2000–2009 decade. There were many contributing factors. Among others, some of the most important surround the failures of several of the macroeconomic and agricultural policies enacted by the former regime (1968–2003). One key consideration is the likely detrimental impacts of various policies upon agricultural infrastructure; its destruction of tranquillity and stability of village and rural life; its displacement of its populace through compulsory relocations; and inevitable rural-urban segregations of some key components of social and human-capital-relevant resources. This problem was particularly contentious within the region known as 'Kurdistan' (Cordesman and Ahmed, 1997). In addition, contemporaneous drought; aridity; and scarcity of irrigation water and irrigation resource bases, exacerbated decline. Moreover, ongoing rural-urban resettlement served to magnify rather than mitigate basic infrastructural vagaries.

Iraq's dependencies on foreign-produced food stuffs grew dramatically throughout the 1980s and the 1990s. During 2008, Iraq's 'import dependency ratio' was estimated at approximately, seventy-five percent. One obvious and important implication is that, only about twenty-five percent of the national food requirements are met by locally produced supplies; the residual seventy-five percent being subject to the vagaries and inconsistencies that are inevitable within international food markets. More problematic, however, is the fact that growth in Iraq food production lags significantly behind its growth in human population. Whereas Iraq's population grew 3.2 percent from 1971 to 1990, cereal production grew by only about 1.2 percent during the same period (Schneppf, 2004). Quantification of such deficiencies can be stated alternately. The recommended daily per capita calories suggested by the World Health Organisation amount to, approximately 2210 kilojoules (Edirisinghe, 2004). Estimated proportions of the population failing to meet this minimum standard (World Food Programme-Iraq, 2004) range from as low as 7.0 to as high as 13.9 percent. This proportion translates to a deficiency befalling approximately 2.1 to 4.17 million persons (Central Organization for

Statistics and Information Technology-Iraq, 2010; Food and Agriculture Organization-Iraq, 2009). Put another way, concerns surrounding food security in Iraq during the study period arise from the fact that a population about the size of the total population of New Zealand, is calorie deficient.

Inter-temporal and inter-regional fluctuations in deficiencies make more problematic the issue of getting food to the needy at the right time and in the right place. In short, age-old concerns about famine-early warning systems, availabilities and entitlements to food (Sen, 1981; Bowbrick, 1986; Devereux, 1988) are no less relevant in Iraq as they are elsewhere; they make study of Iraqi calorie demand and study of Iraqi food policy, interesting, potentially insightful and potentially bountiful; and, inevitably, raise scope for nuanced empirical enquiry.

One very important component of daily infrastructure confronting its population's day-to-day food-market transactions is the so-called *Public Distribution System*. The Public Distribution System is a substantial redistributive policy mechanism which distributes both food and non-food items to households on a, primarily, monthly basis. The significance of The Public Distribution System mechanism is large and encompassing, comprising almost ten percent of Iraqi GDP (World Bank, 2011). With respect to food-stuffs, food commodities, and food-related household items, 'The System' makes essential quantities of staple commodities available at 'nominal' prices. Approximately, and based on figures collected privately, per-capita transfers ranging from between US\$3.41 and US\$8.00 are enacted daily during the 2002–2003 consumption year (Edirisinghe, 2004). Approximately 21 percent of public income is allocated to The Public Distribution System programme. The gross-domestic product allocated to The System (approximately 10 percent) exceeds the amounts devoted to education (approximately 6 percent) and health (approximately 3.4 percent) (World Bank, 2011). It is believed that this scheme protects more than half of Iraq's population from severe food shortage (Edirisinghe, 2004).

The sheer size of *The System*, measured in terms of GDP, raises concerns about its distortionary impacts across the Iraqi economy. There are two reasons. First, the programme is conjectured to distort pricing, market allocations, and the inherent 'signals' that farm-gate and food-retail, *laissez-faire* determinations may engender. Second, the presence of 'artificial support' of calorie intake makes difficult discerning the responsiveness of calorie demands to changes in various correlates; most notably, changes in market prices. But also calorie demand's responsiveness to income change.

The advantages of The Public Distribution System warrant emphasis, essentially enabling Iraq to avoid more injurious humanitarian crises than it would otherwise; and providing a reliable 'safety net' for a considerable mass of impoverished citizens. But this societal redistribution arrives at considerable cost, involving some \$US 6.30 to transfer a mere \$US 1.00; and this 'dead-weight burden of transfer' is considerably higher than most other public interventions in operation, globally (The World Bank, 2005). Consequently, policy-makers face considerable dilemma, when confronting change with respect to The Public Distribution System. Three proposals currently under scrutiny include rapid elimination of the Public Distribution System; replacement of the Public Distribution System by direct cash transfers available to all Iraqi citizens; and replacement of The Public Distribution System by means-tested cash transfers available to selected Iraqi citizens. At the heart of this policy debate are the effects of *System* abolition on the calorie intake of Iraqi food consumers; the impact on calorie demand of cash-transfer-supported *System* abolition; and the effects of *System* abolition in the presence of targeted transfer support. In short, the unknown complexities surrounding calorie-intake and income redistribution concerning *The Public Distribution System* raise considerable scope for empirical enquiry.

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