

Food and (In)stability: Challenging Assumptions and Proposing New Methods

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Introduction

Physical and economic access to food is needed to sustain any and all human activities. This conspicuous reality has an almost equally obvious ramification: people – both individually and collectively – will seek to acquire food virtually regardless of the circumstances in which they find themselves. The range of efforts involved in these tasks is exhaustive, from phone calls and trips to markets to travelling long distances and braving difficult or dangerous circumstances. The costs are likewise highly variable, ranging from relatively small household expenditures to large commitments of time, labour and income. The stakes remain universal however, for calories, like water or breathable air, represent a truly existential human need. As such, postulations that people and groups will respond actively, and sometimes violently, if their access to food is compromised enjoy a comfortable intuitiveness.

Such notions are founded not just on the fundamentality of human food requirements, but also on principles that public social institutions, most markedly governments, have the responsibility of ensuring food access to their respective citizenries.¹ Events, moreover, often seem to bolster ideas that deficits in food access, most notably through price spikes caused by market machinations, can spark unrest, rebellion and violent opposition to various status-quos. These premises were important for Malthus – who feared a ‘prodigious’ and violent waste of human life occasioned by a perpetual struggle for food² – just as they are for those suggesting that impediments to food access have driven recent social upheavals in the Middle East and North Africa (MENA).

Such assertions beg a series of challenges. First, while food’s place in the hierarchy of human needs makes its inaccessibility a driver of grievances, the implications of such grievances vary greatly. Context is conspicuously important, and the drivers of food insecurity³ as well as the results of it defy homogenous or widely-inclusive explanations. Second, food insecurity is vastly important in its own right as a driver of hunger, poor health, poverty and destitution.⁴ Relating food insecurity to conflict and instability can be a benign if at times analytically- stretched pathway for promoting the importance of effective food policies and resource prioritisation to this end. It can also, however, distract from the everyday suffering that attends food insecurity and frame hungry people as risks rather than victims.⁵ Third, and most fundamental for explorative purposes, it is difficult to ascertain the role that food

¹ For more attention to this point see: Fullbrook, David (2010), “Food as Security”, *Food Security*, 2, pp. 5-20. Additionally, governments are an implied and at times explicitly delineated intended steward of food security within the basic principles of the concept. See: World Food Summit 1996, *Rome Declaration on World Food Security*, Rome: UNFAO.

² Malthus, Thomas (1998 [1798]), *An Essay on the Principle of Population*, Electronic Scholarly Publishing Project, <http://www.esp.org>.

³ The concept of food security used in this paper is taken from the UNFAO. See: UNFAO (2006), “Food Security”, Policy Brief, Issue 2. ftp://ftp.fao.org/es/ESA/policybriefs/pb_02.pdf

⁴ For figures and analysis concerning global food insecurity see: IFPRI (2012), *Global Hunger Index*, Washington D.C.: IFPRI.

⁵ For arguments about such risks in environmental, food and climate security literature see: Elliott, Lorraine (2012), “Climate Change and Migration in Southeast Asia: Responding to a New Human Security Challenge”, Asia Security Initiative Policy Series, Working Paper No. 20.; and Hartmann, Betsy (1998), “Population, environment and security: a new trinity”, *Population, Environment and Security*, 10(2), pp. 113-128.

(in)security plays in the causal milieus that lead to instability and violence. Food-related dynamics invariably combine with a series of other factors in ways that mask their role and expand analytical requirements.

This final challenge is the focus of this paper; which argues that there is a dissonance between those seeking to isolate and assert the role that food plays in fomenting insurrection, and those exploring the interactive pathways by which food contributes to the same phenomena. The former position, while adding value on some fronts, can overreach on the possibility of understanding specific food-conflict connections and, subsequently, concerning the wide applicability of these connections themselves. The latter investigations place food within wider causal complexes and rest on more solid foundations. These lines of enquiry could benefit from further methodological expansions.

The paper proceeds in two primary sections. The first critiques views of seemingly linear and transferrable connections between food price spikes and political upheaval in the Middle East and North Africa (MENA) from 2011 onwards. The section argues that these positions assume a level of methodological ‘closure’ that is not appropriate for the task and leads to a series of problematic assumptions. The second section begins by briefly presenting some arguments that take a more modest and defensible position on the role that food played in the same upheavals and offers some underexplored methodological pathways for taking such work forward.

Food and fighting: Dubious assumptions

A number of media outlets wrote of correlations and possible causal linkages between painful food price increases and the so called ‘Arab Spring’ that sprung up in 2011. The *Economist* framed food price increases as both a ‘trigger’ and a ‘final nail’ in the grievance coffin to explain the unfolding events.⁶ *The Guardian* ran an op-ed framing the Arab Spring as bread riots run more fully amok and targeting large grain corporations in the United States as holding the affected states ‘hostage’.⁷ Friedman at *The New York Times* focused on the interconnectedness of global markets and climatic and environmental changes to explain food as an emergent stressor.⁸ Closer to the events, *Al Jazeera* ran a piece lamenting the Arab countries’ dependence of international food systems and the civil strife which it beget.⁹

These voices varied, but coalesced around a number of important points: that food prices in key commodities rose acutely between 2008-2010, that these increases resulted from the crop failures and the machinations of international food markets – both of which MENA countries were vulnerably to and had little control over – and that in an era of volatile climatic changes and complex market connections, such challenges would likely amplify. They also took some care to include caveats, both implied and explicit, that upheavals in MENA countries had many causes and that food was simply an important and often under-recognised one.

⁶ “Food and the Arab Spring: Let them eat baklava” (2012), *The Economist*, 17 May. <http://www.economist.com/node/21550328>

⁷ Zurayk, Rami (2011), “Use your loaf: why food prices were crucial in the Arab Spring”, *The Guardian*, 17 July. <http://www.guardian.co.uk/lifeandstyle/2011/jul/17/bread-food-arab-spring>

⁸ Friedman, Thomas L. (2013), “The Scary Hidden Stressor”, *The New York Times*, 2 March. http://www.nytimes.com/2013/03/03/opinion/sunday/friedman-the-scary-hidden-stressor.html?_r=0 Friedman drew from the report by the Center for American Progress that is discussed in the following section.

⁹ Malik, Adeel (2011), “The economics of the Arab Spring”, *Aljazeera*, 13 October. <http://www.aljazeera.com/indepth/opinion/2011/10/20111010142425419849.html>

The attention to food as a causal underpinning of the Arab Spring reflects both empirical realities and the movement of ‘non-traditional’ security concepts further into the mainstream consciousness.¹⁰ Such analyses avoid problems of seeking only social explanations to social phenomena, and open up discourses on the causes of instability to environmental and otherwise physical variables. Problems arise not from these laudable efforts, but rather from efforts that underrepresent the importance of non-food related causes of social upheaval and are overly ambitious about the degree that causal linkages can be extrapolated to wider temporal and spatial contexts.

Some recent and widely-noted work exemplifies these problems.¹¹ With unrest in MENA countries in mind, Lagi and colleagues at the New England Complexity Institute review correlations between the FAO food price index and instances of food riots between 2004 and 2011. While they briefly acknowledge the relevance of a ‘variety of factors’, the authors are unequivocal in their claim that food prices were ‘*the precipitating condition*’ for social unrest in MENA countries during 2011.¹² Lagi and colleagues argue that widespread unrest stems not from long-standing political failures but from ‘sudden perceived failure[s]’ to provide essential security (in this case through food) to the population.¹³ The authors then document several correlations between global food price spikes and ‘food riots’ around the world (primarily in the MENA) from 2008-2011, and suggest that regional unrest was ‘triggered by food prices’.¹⁴ Extrapolating out, the authors proffer a ‘threshold’ for global food prices that will trigger ‘increasing and global unrest’ and conclude with thoughts about how these food price increases should be avoided.¹⁵ Lagi and colleagues use a fleetingly-described mathematical method in an attempt to control for the possibilities of coincidental connections between food prices and unrest, and argue that their study ‘supports a growing conclusion that it is possible to build mathematical models of global economic and social crises’.¹⁶

The work of Lagi and colleagues has affinity with the lengthier and more technically weighty work of Arezki and Brückner at the International Monetary Fund. The authors use a series of econometric methods to measure the effects that variations in international food prices have on democracy and intra-state conflict. They call on a large sample size, both temporally and geographically, and argue that increases in food prices “*lead to a significant deterioration of democratic institutions and a significant increase in anti-government demonstrations, riots, and civil conflict*”.¹⁷ Arezki and Brückner utilise a number of definitional matrixes to score

¹⁰ For discussions of this movement from multiple perspectives see: Anthony, Mely C., Ralf Emmers and Amitav Acharya (2006), *Non-Traditional Security in Asia: Dilemmas in Securitisation*, Hampshire: Ashgate.

¹¹ Lagi, Marco, Karla Z. Bertrand and Yaneer Bar-Yam (2011), “The Food Crises and Political Instability in North Africa and the Middle East”, *New England Complex Systems Institute*, Working Paper.; Arezki, Rabah and Markus Brückner (2011), “Food Prices and Political Instability”, IMF Working Paper WP/11/62.

WP/11/62

¹² Lagi et al (2011), op. cit., pp. 1-2. Italics added.

¹³ Ibid., p. 2.

¹⁴ Ibid., p. 4.

¹⁵ Ibid., p. 4. Lagi and colleagues place specific blame on agricultural policies in the United States, through speculator activities and ethanol production.

¹⁶ Ibid., p. 7. Other supporters of this conclusion, according to the authors, include among others: Lim, M., R. Metzler, Y. Bar-Yam (2007), “Global pattern formation and ethnic/cultural violence”, *Science* 317, 1540.; MacKenzie, D. (2011), “I predict a riot: Where the next dictator will fall”, *New Scientist*.; Kelland, K. (2011), “Scientists who predict change enjoy fertile times”, *Reuters*, 14 March.

¹⁷ Arezki and Brückner (2011), op. cit., p. 1. Italics added. The sample size referred to here spans 120 countries from 1970 through 2007. The authors find little connection between food prices, democracy and civil conflict in developed countries.

levels of democracy, civil-conflict and the like and model the relationships that these variables have to food prices. They conclude that there is statistical defence for claims that food prices increases lead to deteriorating social conditions in developing states, including through exacerbating civil strife and eroding democracy.¹⁸

Both studies employ quantitative measurements (described in detail in Arezki and Brückner and in passing by Lagi and colleagues) to ostensibly reduce or eliminate the possibility for chance and miscalculation and make their arguments with full causal confidence. In doing so, they both assume the possibility of creating artificially ‘closed systems’ from which one can draw conclusions about the importance of specific variables. The closure implied here reduces explanations of observed events to only those that are addressed within the parameters of the experimental system. These approaches borrow from natural science and subsequently positivist social scientific methods that are based on progress through effective experimentation, measurement and control techniques. Such techniques are useful because many natural scientific mechanisms, such as the laws of motion in physics, are stable and repeatedly observable in both the laboratory and/or the physical world.¹⁹

However, while closed system research can be useful in physical laboratory science, closure does not exist in the social world. Social systems are more “*changeable*” than natural systems in that they are inherently and fundamentally influenced by human activities and interpretations.²⁰ In cases such as food price movements and instability, where human agency and fluctuating contexts add erratic inputs into experiments, causal processes are highly mutable. Social mechanisms are also not universal, but rather change constantly as a result of altered human behaviour and changes in the context within which human actions are taken. This precludes experimentation in the natural scientific sense and problematizes, for example, claims that food prices changes will act in specific and predictable ways across collectivised samples of ‘developing countries’. As Danermark and colleagues observe, “...it is hardly possible to create a social situation where one can systematically manipulate and control the influences from all conceivable social factors, in order to study the effects of one or a few of these factors.”²¹ Such systematic manipulation and control, however, is largely what correlative research such as that by Lagi and colleagues and Arezki and Brückner is based upon.

A second problem with what can rightly be deemed these ‘naturalist’ approaches to food and (in)stability connections is that these methods focus upon correlative and observable *effects* of phenomena under study at the expense of understanding the *mechanisms* which produce them. Such approaches lend themselves to searching for repeated conjunctions of events that

¹⁸ Ibid.

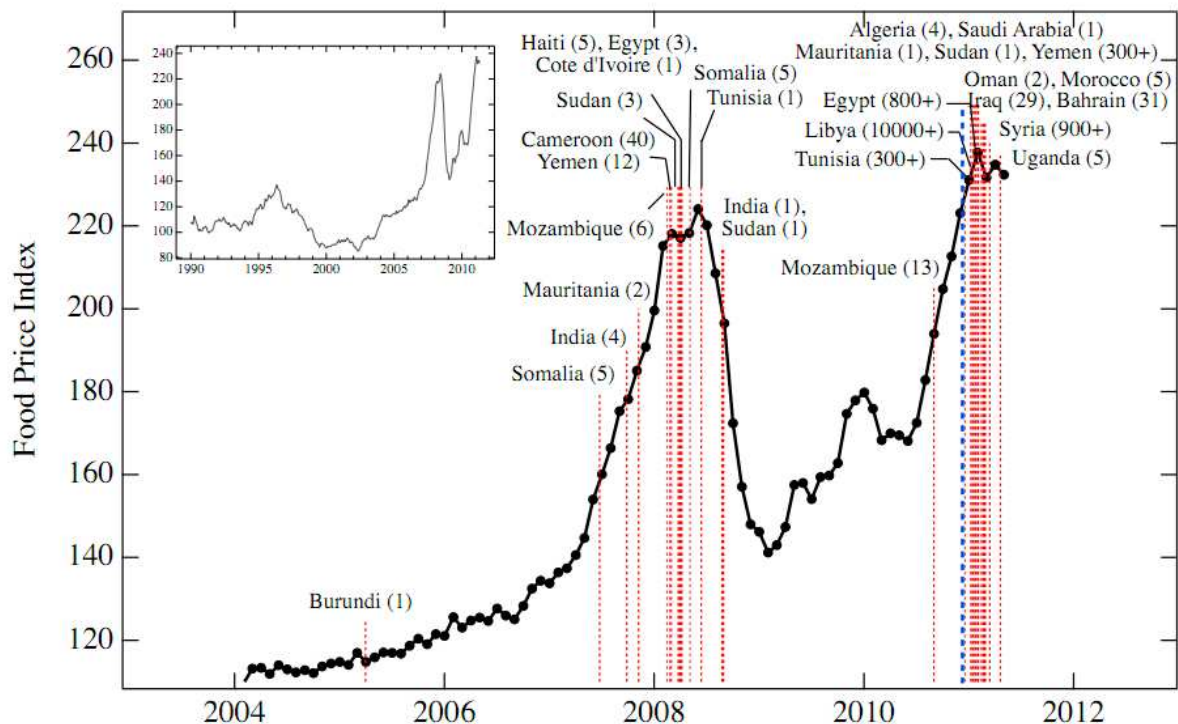
¹⁹ The practice of applying natural scientific methods to social systems gained momentum through the work of the late-18th Century philosopher David Hume, who attempted to apply a natural scientific method based upon Newtonian mechanics to address social and political theory. Hume’s goal was to create structural and methodological approaches for exploring social systems that rival the rigour, regimentation and solution finding potential of natural scientific enquiry. See: Hume, David (1987) [1777a], “The Sceptic”, in *Essays: Moral, Political, and Literary*, Indianapolis, IN: Liberty Fund Inc.

²⁰ Danermark, B., Ekström, M., Jakobsen, L., & Karlsson, J.C. (1997), *Explaining Society*, New York: Routledge. p. 35. Italics included in the original.

²¹ Ibid.

demonstrate consistent results, but do not address the reasons that these events occur.²² The graph by Lagi and colleagues provides a strong example.

Figure One: Lagi, Bertrand and Bar-Yam on Food Prices and Rioting



The Y-axis shows food price fluctuations according to the FAO Food Price Index while the red-dashed lines mark the start date for associated instances of unrest.

While these data compellingly show food price correlations with so-called ‘food riots’, they tell the reader little about the pathways and processes that connect the two. The emphases on correlations fail, in other words, to address the structures and powers that exist between causes and effects. Hume provides the foundation for these approaches to causality through a framework that seeks to help an enquirer determine true causes of events by distinguishing which events are the result of *chance* and which are the result of discernible *causes*. He concludes that, while making such determinations is challenging, the most appropriate path forward is to look for the repetition of consistent causes resulting in similar effects.²³ Hume’s general rule of causality states that “[w]hat depends upon a few persons is, in a great measure, to be ascribed to chance, or secret and unknown causes; what arises from a great

²² Hume argues that the powers which produce results mask themselves from human observation. Therefore, explorations into causes and effects must be limited to those processes which can be readily observed as being causally connected. See: Hume, David (1976) [1777d], “On the Idea of Necessary Connection”, in Brand, Myles, ed. (1976), *The Nature of Causation*, Chicago: University of Illinois Press, pp. 45-64. See also: Archer, Margaret (1998), “Introduction: Realism in Social Sciences”, in Archer, et. al., eds. (1998), op. cit., p. 192. Again the example of a simple monetary transaction provides a useful analogy. Observing repeated exchanges of money for goods or services does not sufficiently explain *why* these exchanges occur or illuminate the bases upon which they are founded. Answering the ‘why’ question requires understanding underlying social structures (such as supply and demand, currency values, etc. in the monetary exchange example) that are impervious to strict sensory observation and therefore not readily empirically observable

²³ See: Hume, David (1987) [1777c], “On the Rise of Arts and Sciences”, in *Essays: Moral, Political, and Literary*, Indianapolis, IN: Liberty Fund Inc., pp. 111-137.

number, may often be accounted for by determinate or known causes.”²⁴ This principle is consistent with Hume’s attempts to “naturalise” social scientific enquiry, in that observable repetitious conjunctions of events (also known as empirical regularities) are thought to be open to meticulous measurement. Hume’s relatively simple premise promoting repeated observation as the standard for causality has since underpinned generations of causality assumptions.

The positivist tradition thus takes up the Humean banner to construct research models that tie causality to observable conjunctions of events in which a cause *A* leads to an event *B*. These approaches relegate reality to the sensory perceptions of humans and refute the value (or possibility) of exploring unobservable phenomena; leaving empirical realities as the primary means for determining causality.²⁵ In other words, if effect *B* can be shown to follow cause *A* repeatedly throughout a study, with other explanations ‘controlled’ for, then the basis for arguing that a causal relationship exists between *A* and *B* is established. Lessons from these correlations are then used to explain phenomena and predict future events based upon ostensible causal relationships.²⁶ Since observing the conjunctions of events is necessary for establishing causality, the argument goes, empirically verifying theories regarding these conjunctions is the key to strong research. The more empirical evidence a study can develop to support a theorised causal correlation, the stronger the argument is for causality existing between or among events. The meticulous econometric models of Arezki and Brückner may be viewed through this lens, as tools to hone in on empirical regularities connecting food price with civil strife are seen as the key to unlocking causal connections.

However, the search for empirical regularities falls short in several ways. First, realities can be recognised that are “independent of discourse and language” and based upon things beyond just “observable facts”.²⁷ Bhaskar argues for example that it is the nature of things that make them objects of knowledge, using the analogy that “it is because sticks and stones are solid that they can be picked up and thrown, not because they can be picked up and thrown that they are solid.”²⁸ This calls into question the capacity of investigators to quantitatively isolate and measure the specific causes leading to outcomes in an open system. Second, the implied faith that observing repeated conjunctions yields clear knowledge about causality needs tempering. Social phenomena result from a *combination* of interdependent generative mechanisms that lead to an effect or set of effects. For this reason the isolation, measurement and testing individual generative mechanisms can be misleading.²⁹ One might observe strong empirical regularities connecting *A* and *B*, that is *B* follows on from *A* to a large extent throughout a study, but these findings could ignore other variables that are causally relevant to understanding what actually leads to *B*. Even carefully constructed studies can misinterpret the causal linkages connecting two or more objects and as a result reach conclusions about causes that, in Humean terms, actually equate to chance.³⁰ Such conclusions risk producing misleading results that overestimate, underestimate or miss completely important causal relationships. Third, even where empirical regularities can saliently inform social science about correlative relationships, and be accepted as accurate

²⁴ Ibid., p. 112.

²⁵ Danermark et. al. (1997), op. cit., p. 8.

²⁶ See: Keat, Russell and John Urry (1978), *Social Theory as Science*, London: Routledge, p. 4.

²⁷ Dickens, P. (2004), *Society & Nature*. Cambridge, UK: Polity Press, p. 20.

²⁸ Bhaskar, R. (1979), *On the Possibility of Naturalism*. Hemel Hempstead: Harvester Press Ltd., p. 25.

²⁹ Ibid., p. 45. Bhaskar goes so far as to say that all philosophical traditions that presuppose closure in social science, including “Humean theories of causality and law”, must be “totally discarded.”

³⁰ For a useful and succinct analysis of this problem with Hume’s assessment of causality see: Ducasse, C. J. (1976), “Causality: Critique of Hume’s Analysis”, in Brand, ed. (1976), op. cit., pp. 65-76.

without controversy, they do little to explain the nature of the actual causes leading to the particular result. As Danermark and colleagues argue, “...the predominant methods of empiricist social science, the study of empirical regularities or co-variation between standardized variables, cannot offer opinions on anything but only empirical and statistical correlation; they cannot answer questions regarding cause.”³¹ Such studies can establish the presence of a strong correlation, in other words, but the knowledge of the correlation alone does not explain the reasons that it is so. Such knowledge is insufficient because one still needs to investigate the *mechanisms* that produce these effects.³² The following section explores possible approaches to understanding the causal mechanisms that connect food and (in)stability.

Food as a destabiliser: Seeking new approaches

Recent collected works addressing linkages between climate change and unrest in MENA countries, with food access situated squarely between the two, offers a refreshing contrast to the positivist/naturalist approaches detailed in the previous section.³³ The collection of studies, Slaughter notes, does not claim that climate change or food stresses ‘caused’ this unrest, but rather that these factors combined with a ‘volatile mix of underlying causes’ to contribute to it.³⁴ This less ambitious claim recognises the complex causal underpinnings of the MENA uprisings, and reveals less hubristic notions about our capacity to measure and precisely assign causal weights to the various factors. These starting points create the space needed to explore the pathways connecting food and instability.

The language of authors that take similar approaches is subtly telling. Johnstone and Mazo argue that the so-called ‘Arab Spring’ would have likely happened in some form in the future, but that environmental changes and food shocks *may* have sped the process along.³⁵ Femia and Werrell delve into causal inter-linkages to argue that a combination of ‘social, economic, environmental and climatic changes’ (including those relating to food) strengthened opposition momentum in Syria and eroded the legitimacy of the Assad regime.³⁶ Slaughter meanwhile is unequivocal about the need to understand causal complexes rather than the isolated causal roles of particular variables. She writes of a ‘complex web of conditions and interactions’, an ‘interplay’ between ‘land, water, food, migration, urbanisation, and economic, social and political stress’, and the role of natural changes ‘exacerbating’ changing social trends.³⁷ Moreover, the temptation to reify and collectivise issues across different contexts is largely resisted, with an emphasis rather upon gaining a deeper understanding of how individual cases proceeded. Under-utilised causality frameworks can help to deepen and extend such investigative work on the relationship between food and stability, and in doing so make it a more robust counter to the offerings described in the previous section.

³¹ Danermark, et. al., (1997), op. cit., p. 53.

³² Outhwaite, William (1998), “Realism and the Social Sciences”, in M. Archer, R. Bhaskar, A. Collier, T. Lawson & Alan Norrie (Eds.), *Critical Realism: Essential Readings* (pp. 282-296). London: Routledge, p. 285. Italics added.

³³ Werrell, Caitlin E. and Francesco Femia, eds. (2013), *The Arab Spring and Climate Change*, Washington D.C.: Center for American Progress, Stimson, The Center for Climate and Security.; See also: Brinkman, Henk-Jan and Cullen S. Hendrix (2011), “Food Insecurity and Conflict: Applying the WDR Framework”, World Development Report 2011 Background Paper.

³⁴ Slaughter, Ann-Marie (2013), “Preface”, in Werrell and Francesco (2013), op. cit., p. 1.

³⁵ Johnstone, Sarah and Jeffrey Mazo (2013), “Global Warming and the Arab Spring”, in Werrell and Francesco (2013), op. cit. Italics added.

³⁶ Femi, Francesco and Caitlin Werrell (2013), in Werrell and Francesco (2013), op. cit.

³⁷ Slaughter (2013), op. cit., p. 4-6

Improving causality arguments necessitates focusing on the structures and relationships that possess causal powers. Causal powers exist in objects and structures, and that these powers are present regardless of whether or not they are exercised. The power of objects results from their inherent natures, such as a match having the power to produce fire. These powers will only be actuated and produce events if they are triggered; in the case of the match such triggering requires that it be struck, but the powers exist regardless of whether or not such an effect eventuates.³⁸ The context within which a causal power exists is also important, as it helps determine whether or not the power will be triggered. A match sitting in a box, for example, is of less interest than a match in a person's hand and of greater interest still if held by someone near flammable material. Combinations of causal powers and the contexts within which they exist are therefore at the centre of processes that underlie events.³⁹ As it regards food access and (in)stability, these premises preclude sweeping statements across large samples of varied contexts in favour of deeper understandings of how given cases proceed. Causal mechanisms do not have normic effects, in other words, rather the circumstances within which a causal mechanism acts are vital to the outcome.⁴⁰

The importance of context is further bolstered by the capacity for multiple causal mechanisms to affect each other. In complex causal chains such as those linking food access and (in)stability, for example, some combinations of mechanisms will not affect each other, others will frustrate or prevent certain other mechanisms from being actuated, and other combinations will be reinforcing and compounding.⁴¹ So how then can one gain methodologically-sound understandings of such causal mechanisms? Three possibly tools are offered here. The first offers a framework for causality and the latter two options for seeking out causal relationships.

The INUS Condition

Mackie contends that 'causes' are typically *Insufficient* but *Necessary* elements of a condition that is *Unnecessary* but *Sufficient* (INUS) for producing a result.⁴² Mackie simplifies this seemingly convoluted construction using the example of a house catching fire as the result (in the conventional sense of the word) of a short circuit:

If I say that this short circuit caused this fire, I am claiming only that the short circuit in conjunction with other factors which were actually present formed a sufficient condition for the fire's breaking out, that these other factors alone, without the short circuit, were not a sufficient condition for the fire, and that no other sufficient condition for the fire was present. I should probably admit that quite different sets of factors could constitute sufficient conditions for such a fire. The short circuit, which I describe

³⁸ Collier, A. (1994). *Critical Realism: An introduction to Roy Bhaskar's philosophy*, London: Verso., p. 43.

³⁹ Patomäki, H. (2002), *After International Relations: Critical realism and the (re)construction of world politics*. New York: Routledge., p. 8.

⁴⁰ See: Danermark, et. al. (1997), op. cit., p. 55. The authors write: ...the relation between causal powers or mechanisms and their effects is not determined but *external* and *contingent*. The fact that a generative mechanism only operates when it is being triggered indicates that it does not always operate – and that, if it is ever triggered, or when it is, the present conditions or circumstances determine whether it will operate. And if it does, the actual effect is also dependent on the conditions.

⁴¹ Ibid., p. 56.

⁴² Mackie's work has affinity in many ways with arguments on causal conditions presented by Richard Taylor. Taylor writes that "[e]very event occurs under innumerable and infinitely complex conditions. Some of these are relevant to the occurrence of the event in question, while others have nothing to do with it." See: Taylor (1976), op. cit., p. 296. The *necessary* component of the INUS condition is at times synonymised with *nonredundant*.

as the cause of the fire, or as having caused it, is not in itself either necessary or sufficient for the fire; but it is a nonredundant part of a sufficient condition which was also, as it turned out, nonredundant. This sort of condition, an *insufficient* but *necessary* part of an *unnecessary* but *sufficient* condition, I call for short (using the initial letters of these words) an *inus* condition.⁴³

Mackie's example shows that a conglomeration of factors creates conditions leading to a result. When one says that a short circuit 'caused' a fire, what he or she actually means is that the short circuit combined with other elements, present within the context in which the short occurred, to produce fire.⁴⁴ The short circuit is an *insufficient* cause, in that other factors (presumably the presence of flammable objects nearby) are also needed to explain the occurrence of fire.⁴⁵ The combination of the circuit shorting within an environment conducive to causing fire is also an *unnecessary* cause of fire, as to argue otherwise would require demonstrating that no other causes of fire exist. However, the short circuit is a *necessary* part of a condition *sufficient* for causing fire. The fire would not have occurred at the time and under the conditions that it did were it not for the short circuit. The combination of factors was clearly *sufficient* for causing fire since a fire did actually occur. Sufficiency in this case is most directly evidenced by the presence of the result.

The INUS condition represents a more accurate portrayal of the way cause and effect actually occurs in the social world than analyses that pursue variable measurements and empirical regularities. Attempts to establish causes through isolating individual cause-effect relationships run the risk of underemphasising other causes and contextual factors leading to an event, and as a result lead to an overly simplified definition of a 'cause'. For example, in the case of the relationship between a short circuit and a fire, Mackie points out that common vernacular supports stating that the short circuit 'caused' the fire.⁴⁶ This statement is an oversimplification that does not respect the other necessary components of the fire's origins. What is really meant by cause, when there are a multiplicity causes acting together, is an INUS condition.⁴⁷ This holds import for conjectures about food price spikes 'causing' or 'leading' to instability. These are not merely semantic oversights, but rather statements that oversimplify causal complexes in ways that detract from their explanatory power.

Abstraction

Recognising the relevance of causal complexes is an important first step, but there remains a need for tools to draw out particular relationships from within a complex whole. 'Abstraction' provides such a tool by delineating what causal components of a phenomenon constitute the

⁴³ Mackie, J. L. (1966), "The Direction of Causation, *The Philosophical Review*, 75(4), p. 445. Mackie elaborated upon this example in 1976 by framing it in terms of the meaning of 'cause' in everyday usage. He suggested that when fire experts state that the 'cause' of the fire was a short circuit, what they actually mean is that it was a nonredundant part of condition that was essential for producing a result (in this case a fire). Mackie writes: "Clearly the experts are not saying that the short-circuit was a necessary condition for this house's catching fire at this time; they know perfectly well that a short-circuit somewhere else, or the overturning of a lighted oil stove, or any number of other things might, if it had occurred, have set the house on fire. Equally, they are not saying that the short-circuit was a sufficient condition for this house's catching fire; for if the short-circuit had occurred, but there had been no inflammable material nearby, the fire would not have broken out, and even given both the short-circuit and the inflammable material, the fire would not have occurred if, say, there had been an efficient automatic sprinkler at just the right spot. See: Mackie, J. L. (1976), "Causes and conditions", in Brand, Myles ed. (1976), op. cit., p. 308.

⁴⁴ Mackie (1976), op. cit., p. 308.

⁴⁵ This point is further evidenced by the fact that circuits often short without producing fires.

⁴⁶ Ibid.

⁴⁷ Marini, Margaret M. and Burton Singer (1988), "Causality in the Social Sciences", *Sociological Methodology*, 18, p. 355.

focus of a particular study. To improve understandings of generative mechanisms that are causally relevant, research must focus on certain mechanisms at the temporary expense of others.⁴⁸ Abstraction is particularly necessary for research conducted within open systems.⁴⁹ In closed systems, research can afford to rely, to a degree, upon testable observations of empirical regularities. Open systems, conversely, erode such testable opportunities and require abstractions to categorically organise components contributing to an event.⁵⁰ By temporarily individuating the causes and circumstances leading to an event, abstractions begin the process of developing knowledge about the characteristics of these causes and circumstances. After this impermanent abstraction of specific dynamics, the task becomes to reconstitute the drivers of the phenomenon under study in a way that respects the interplay among them. Lawson describes the value of abstraction for individuating “one or more aspects, components or attributes and their relationships in order to understand them better. Once this has been achieved it may be possible to combine or synthesise the various separate understandings into a unity that reconstitutes, or provides a better understanding of, the concrete.”⁵¹

By individuating and then reconstituting the variables underlying an event, abstracting methods categorise the contexts, powers and tendencies that contribute to an event. Delineating the categories or sectors to be abstracted upon for greater understanding is an essential initial step in research design. Here the modes of inference used become important.

Modes of Inference: Induction and Deduction versus Abduction and Retroduction

Inference is the process of relating the particular to the general. It provides a group of ways in which arguments can be logically constructed to reveal how an observed individual phenomenon (for example unrest in MENA countries) is linked to the larger dynamics surrounding an investigation (food price fluctuations in various forms and settings).⁵² Two prevalent modes of inference in social science, inductive and deductive logic, provide dichotomous (although not necessarily conflicting) approaches for revealing such linkages.⁵³

Inductive inferences construct generalisations based upon repeated observations. These generalisations are sought by inductive research so that the research might reveal explanatory or predictive relationships that will hold true in cases beyond the sample(s) that were directly studied. For example, an experiment that cools water down would observe that when water temperatures reach zero degrees centigrade, the water changes to solid form (freezes). If such an experiment is carried out repeatedly and achieves consistent results, then one can inductively infer that if water is cooled to zero degrees centigrade in other contexts that it will also freeze. This simple example reveals the value of inductive logic, in that it can allow for

⁴⁸ Abstraction is particularly necessary for research conducted within open systems that focuses upon causal mechanisms. See: Dickens, Peter (2003), “Changing our environment, changing ourselves: critical realism and transdisciplinary research”, *Interdisciplinary Science Reviews*, 28(2), pp. 99-100.

⁴⁹ Ibid.

⁵⁰ See: Sayer, A. (1992), *Method in Social Science: A Realist Approach*. 2nd ed., London: Routledge. p. 116.; and Danermark, et. al. (1997), op. cit., p. 69.

⁵¹ Lawson, Tony (1998), “Economic science without interpretation/Abstraction”, in Archer, et. al., eds., op. cit., p. 170.

⁵² Danermark, et. al. (1997), op. cit., p. 78.

⁵³ Simply put, inductive inference creates theories from empirical observations while deductive inference begins with established theories and tests their validity with empirical observation. These two modes of inference have oft-demonstrated value. There are, however, limitations to both inductive and deductive inference that render other forms of inference useful for addressing food-(in)stability questions.

predictive inferences to be understood for stable and repeatedly observed processes. For the complex dynamics connecting food and (in)stability however, induction has some inherently limiting factors.

The first is a pervasive uncertainty surrounding the representative nature of samples that are directly studied. This limitation is consistent with the previously-discussed shortcomings of empirical observations as an explanatory and predictive tool.⁵⁴ Levels of uncertainty are fluctuating and relative. The example of water freezing shows that with inductive inferences, if basic contextual elements remain stable (such as that the water is pure from additional particles and the cooling process proceeds uninterrupted), then the results will be consistent. Likewise, social scientific studies can endeavour to make samples highly representative of larger groups under study to reduce the risk of making errors of inference. Large sample groups and advanced statistical methodologies, such as those used by Arezki and Brückner, are ways to increase confidence that inferred conclusions are accurate. However, for complex questions that transcend multiple sectors of analysis and are changeable over time and in varying contexts, the levels of uncertainty inherent to induction can overwhelm the value of its conclusions. Since food-(in)stability questions are concerned with such complex and changeable scenarios, inductive logic will struggle to draw apt conclusions.⁵⁵

Deductive inference, while polemically different, also possesses shortcomings for understanding food-(in)stability connections. Deduction is an invaluable method for substantiating conclusions drawn from specific accepted premises. The foundation of deduction is a search for evidence supporting a conclusion, and therefore some amount of deductive reasoning should be present, either implicitly or explicitly, in any scientific inquiry. A limitation of deduction, however, is that it reveals little that is new beyond the premise from which deductive tests begin. If the initiating premise in a deductive logical study is that *A* leads to *B*, then if *A* occurs we may logically deduce that *B* will follow. Deduction drives claims such as those made by Lagi and colleagues that if food prices reach certain levels that “persistent global unrest” will follow.⁵⁶ These claims are founded on the premise that *A* leading to *B* is a logically valid and empirically observable trend with wide-ranging explanatory value.⁵⁷ As has been argued, this premise may be dubious. Deductive approaches, like induction, can therefore also provide misleading assertions and fail to address *how* generative structures and mechanisms lead to events. To understand processes that define food-(in)stability connections, less prominent modes of inference prove valuable.

Retroduction and abduction seek to explain the nature of underlying abstracted structures and mechanisms that make phenomena possible. Retroduction begins with empirically observable events and then conceptualises the conditions that were essential for the events coming to fruition.⁵⁸ Retroductive analyses reconstruct the causal factors leading to an event, which will

⁵⁴ Even Hume, for whom empirical regularities were of paramount importance, acknowledged the uncertainty that accompanies constructing generalisations based upon a sample of observations. See: Hume, David (1987) [1777c], op. cit.

⁵⁵ Induction also fails to reveal the underlying structures and mechanisms that lead to effects. It is consistent with the attempts, based upon foundations established by Aristotle, Hume, Mill and others, to draw conclusions from consistent observations. If a study's interest lies with gaining greater understanding *how* processes and contexts lead to phenomena, then induction becomes insufficient for constructing explanations. See: Aristotle (1992), *Rhetoric*, Whitefish, MT: Kessinger Publishing.; Hume (1976) [1777d], op. cit.; and Mill, J.S. (1868), *A System of Logic*. London: Longmans.

⁵⁶ Lagi et. al. (2011), p. 4.

⁵⁷ Danermark, et. al. (1997), op. cit., p. 84.

⁵⁸ Bhaskar, Roy (1986), *Scientific realism and human emancipation*, London: Verso.

have been described at the outset of the study, in order to attain greater understanding of how the event(s) in question came to pass.⁵⁹ In practical terms, retroduction necessitates first describing a phenomenon of interest based upon its observable characteristics and then disaggregating the phenomenon into its constituent parts in search of the conditions that led to it. Retroductively tracing the constituent parts that are essential for understanding the phenomenon in question allows research to draw out causally relevant structures and mechanisms. This approach also enables research to make inferences about the relationships that exist between or among these constituent parts. Retroduction's value thus comes from providing a structure for framing the generative factors leading to an event. This cannot stand alone, however, as the need remains to introduce new ideas and analyses about the generative factors themselves. Abduction is a mode of inference that provides a useful tool for meeting this objective.⁶⁰

Abduction is a redescription of an event aimed at developing a deep conception of its make-up and underlying constituent parts. It requires recontextualising a phenomenon in ways that use new ideas and approaches to provide a unique understanding of its character.⁶¹ Abduction, therefore, is a method that broadens knowledge of, and stimulates new thought processes about, a particular phenomenon as opposed to seeking to establish its 'true' nature.

Accepting abduction as a method requires eschewing the search for empirical 'truths' in favour of pursuing greater understandings. Abduction is concerned with constructing plausible theories and supporting them with logical argumentation and evidence. The conclusions that are drawn in abductive analyses help describe the facets of a phenomenon that are the focus of the research. The conclusions cannot claim to be infallible, encompassing or truthful. They are rather constructed to contribute to the comprehension of the phenomenon, and this contribution will reflect the approach and goals of the research being undertaken. The conclusions drawn will also be only some among many, and this multiplicity reflects the differing perspectives, goals and values that define varying research on the same or like phenomena.⁶² The goals of abduction therefore represent an important departure from traditional deductive approaches to theory construction. Where deduction is concerned with proving something to be a certain way, abduction is concerned with showing how something *could* be.⁶³ In cases of unrest of the MENA countries, for example, abduction avoids questions about whether food access deficits were more or less causally efficacious than factors such as regime type, per capita income and the like, and rather enables research designs that ask questions about where food fits within relevant greater contexts.

Effective abductive research must avoid devolving into simple conjectures about the constituent parts of a phenomenon, and then holding these conjectures to an easily met standard defined by the goals of the research. Establishing criteria that assess the relevance that particular constituent parts and processes have to the main phenomenon is essential. The INUS framework provides a standard for analysing the value of new ideas put forth during an

⁵⁹ Habermas, Jürgen (1984), *The Theory of Communicative Action: Volume I*, Cambridge: Polity Press. Habermas uses the term "reconstructive science" to describe a methodology quite similar to Bhaskar's retroduction. For a discussion of these similarities see: Outhwaite, William (1987), *New Philosophies of the Social Sciences: Realism, Hermeneutics and Critical Theory*, London: Macmillan.

⁶⁰ The concept of abduction as a mode of inference can be traced to: Peirce, Charles (1932), *Collected Papers of Charles Sanders Peirce* vol. 2, Hartshorne, Charles and Paul Weiss, eds., Cambridge: Belknap Press.

⁶¹ Jensen, Klaus Bruhn (1995), *The Social Semiotics of Mass Communication*, London: Sage, p. 148.

⁶² Denzin, Norman (1989), *The Research Act: A Theoretical Introduction to Sociological Methods*, New Jersey: Prentice Hall, p. 100.

⁶³ Habermas, Jürgen (1972), *Knowledge and Human Interest*, Boston: Beacon Press, p. 113.

abductive approach. Abduction calls upon research to propose new explanations about why a certain phenomenon is the way that it is. The INUS condition necessitates that the explanations proposed be analysed by questioning whether a respective factor or process represents an *insufficient* but *necessary* part of an *unnecessary* but *sufficient* condition to cause the main phenomenon under study. Combining the abductive method with the INUS criterion lends rigor to such research while still respecting the complex and multifaceted nature of the phenomenon and the possibility of multiple ways of explaining it.

Conclusion

Food's societal importance makes it unsurprisingly the subject of controversy, discord and grievance. This is particularly true for households, communities and large swathes of societies that are highly vulnerable to food price increases. This paper does not challenge the idea that such price increases are relevant to instability and violence, but rather contests some prevalent assumptions about the nature of these connections and the degree to which food-(in)stability connections will be similar across different contexts.

As such, modesty is called for concerning the degree to which studies can reveal hard and fast analyses about the impacts of global and local food markets on (in)stability, as well as the degree to which such impacts are predictable. Complexity and econometric modelling can help us recognise correlations, which have value in that they can flag fertile ground for more in-depth studies into causal relationships and generative mechanisms. Expectations should be tempered, however, regarding ideas that *Observation + Correlation = Explanation + Prediction*.⁶⁴

Caution is also needed regarding efforts to collectivise analyses across large analytical baskets (eg. 'developing countries'). Understanding better the causal story of one case can lead to knowledge that is germane to similar dynamics in other times and in other places. However, the veracity of such transferred knowledge should be questioned at every turn for its import in the different context. Cases are defined by specific characteristics, and extrapolating that food price increases will have the same or similar effects in countries A and B risks oversimplifying key specificities.

On the surface these cautionary principles appear nearly crippling for efforts to grapple with food-(in)stability challenges. If there is not predictive value in improving understandings of mechanisms producing events, then what practical application do such efforts retain? The answer lies in the importance of developing deep understandings of individual cases in their own right, as such knowledge development can lead to tangible policy outcomes and more solid foundations for progress in the area(s) and sector(s) under study. Secondly, while strict prediction may be misinformed as a goal, developing knowledge about causal relationships in specific cases may make it easier to conduct well-informed discussions about the potential consequences of similar mechanisms working in different settings.⁶⁵ In the case of food and (in)stability, this is a highly worthwhile goal.

⁶⁴ Archer, M. (1998). "Introduction: Realism in Social Sciences", in M. Archer, R. Bhaskar, A. Collier, T. Lawson, & A. Norrie (Eds.). *Critical Realism: Essential Readings* (189-205). London: Routledge. p. 190.

⁶⁵ Danermark (1997), op. cit.; Patomäki (2002), op. cit.