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Broad grievances and urban unrest in the MENA region during prolonged food price hikes

A qualitative comparative analysis of «food riots » in Middle Eastern and Northern African capitals in 2007/2008 and 2010/2011

Master's thesis

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Norwegian University of
Science and Technology

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Abstract

This thesis investigates the impact of the interplay between four important contextual factors enabling unrest in times of high international food prices. The research method applied is a crisp set qualitative comparative analysis (csQCA), where qualitative and quantitative information is used to dichotomize data which thereafter is analysed by use of an algorithm. The cases investigated are 13 capitals in the Middle East and North Africa (MENA) region. The cases are observed during two time periods, 2007/2008 and 2010/2011, where the international food prices are above a certain threshold likely to enable unrest. The thesis is built upon the assumption that high food prices function as a trigger, activating both opportunity structures by lowering mobilization costs, as well as feeding grievances on both individual and group level.

The result of the analysis indicates that for the cases examined in this thesis, a high dependency on food import did not enable urban unrest in the high food price periods. The analysis does further not indicate that the conditions examined here played a crucial part in the differences in unrest levels between 2007/2008 and 2010/2011. Furthermore, none of the conditions examined were found to be necessary for enabling unrest separately, but were sufficient to enable unrest in combination with each other. Finally, the main result of the analysis indicates that the interplay of the conditions "high share of household budget spent on food", the "regime type anocracy paired with repression of civil society organizations" and a "high perception of executive corruption" enables unrest in capitals in the MENA region during times of high food prices.

Sammendrag

Denne masteroppgaven undersøker påvirkningen samspillet mellom fire viktige kontekstuelle faktorer kan ha på forekomst av uro i perioder med høye internasjonale matvarepriser. Forskningsmetoden som er brukt for å belyse dette temaet er 'crisp set' kvalitativ komparativ analyse (csQCA), der kvalitativ og kvantitativ informasjon brukes til å dikotomisere data som deretter analyseres gjennom en algoritme. 'Casene' som blir undersøkt er 13 hovedsteder i regionen Midtøsten og Nord-Afrika (MENA). Disse 'casene' er undersøkt i to perioder, 2007/2008 og 2010/2011, der høye internasjonale matvarepriser er over en viss terskel og slik tilrettelegger for uro. Oppgaven bygger by antakelsen om at høye matvarepriser fungerer som en utløser, ved å aktivere både mulighetsstrukturer gjennom å minske mobiliseringskostnader, samtidig som klagemål i befolkningen øker på både individ- og gruppenivå.

Resultatene fra analysen indikerer at høy avhengighet av matimport ikke er relevant som tilrettelegger for uro for 'casene' som er undersøkt i denne oppgaven. Videre er ingen av de undersøkte faktorene nødvendige for utfallet uro hver for seg, men samlet er de tilstrekkelige for å tilrettelegge for uro. Analysen indikerer ikke at de undersøkte faktorene har vært avgjørende for forskjellene i uronivå mellom 2007/2008 og 2010/2011. Til slutt viser hovedresultatet av analysen at samspillet mellom faktorene "høy andel av husholdningsbudsjett brukt på mat", "regimetypen anokrati koblet med undertrykkelse av sivilsamfunnsorganisasjoner" og "høy oppfatning av elitekorrupsjon" sammen tilrettelegger for uro i hovedsteder i MENA-regionen i perioder med høye matvarepriser.

Preface

Writing a master thesis during the Covid-19 pandemic has been anything but straight forward. Ever changing rules of social distancing and a feeling of isolation created a less than optimal backdrop for productive academic writing. For a year, this project has been a part of my life, in sickness and in health, and I am thrilled to now be able to write the preface for the final version of my thesis.

It has been informative, but challenging, to learn a new research method (csQCA) from scratch. However, I have developed an appreciation for this method where quantitative data is combined with qualitative case information to map out condition-based pathways towards an outcome. I am forever grateful for all the help from my main supervisor, Ole Magnus Theisen, and my method supervisor Pia Piroschka Otte. They have contributed with solid knowledge on academic writing and research in general, and on peace and conflict studies and the method csQCA, respectively. Thank you for your patience and for believing in this thesis, every e-mail reply, every counselling meeting, all the advice and highly qualified opinions. I also wish to extend a thanks to my fellow master's students at the Political Science program, as well as the participants of the Violence, Insurgency and Peace seminar at NTNU, for your helpful feedback and curiosity towards my thesis. Further on, I would like to thank all the researchers who have replied to my e-mails, and especially Ida Rudolfsen who helped assure it would be fruitful to pursue this research question from the very beginning. Also, thank you to Inge Nordang and Gunnvor Berge for allowing me to focus on the link between hunger and conflict as a student intern at the Norwegian UN delegation in Rome, first sparking my interest for the topic of food-related unrest.

Last, but not least, a huge thank you to my family, friends and boyfriend who have supported me and cheered me on every step of the way, encouraging me to see this project through to the end.

Any remaining errors are my own responsibility.

Trondheim, 30.09.2021

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1. Introduction

The United Nations (UN) goal of ending hunger by 2030 has seen several obstacles in its way due to conflict, economic downturns, and climate change. This challenge has been further exacerbated by the COVID-19 pandemic, with disruptions of supply chains, an economic crisis and increasing food prices (Bleich & Fleischhacker, 2021). Thus, it is, once again, highly relevant to investigate the link between high global food prices and unrest in a new light. Among others, Hendrix and Haggard (2015) and Natalini et al. (2019), have found that increasing international food prices have a positive impact on unrest levels, by some termed as "food riots". In 2012, the Food and Agriculture Organization of the UN (FAO) report stated that after two decades of relative stability, global food security was once again under threat, just like in the 1970s, and worse than in the 1930s. This decline in food security was attributed to the combination of high and volatile food prices and the global economy's turbulence (Jayasuriya et al., 2012).

Two big spikes in international food prices occurred recently, one related to the financial crisis in 2007/2008 and the next in 2010/2011. High food prices are bad for both governments and households, especially in developing countries in periods of general economic instability and shocks (Jayasuriya et al., 2012). Further on, high food prices increasingly appeared related to political instability, as the first food price spike led to food riots in countries from Haiti to Bangladesh and Mozambique, while the second spike has been associated with the Arab Spring, where most notably Algeria, Egypt and Tunisia experienced uprisings initiating from frustration related to high food prices (Keating, 2014).

The increased scholarly interest in so-called food riots has led to several studies using both qualitative and quantitative methods to investigate the link between food insecurity and unrest. Within this research field, there is established a general agreement that there are strong scientific indications on the connection between rising food prices and unrest (Rudolfsen, 2020b). The backdrop for the research conducted have also varied, examining for example regime type, organizational levels, and domestic policies. Some literature claims that it is those who have experienced economic improvements and fear a deterioration of their situation who are the first to protest, and not the relatively poorest (Sanchez and Namhata, 2019; Hendrix and Brinkman, 2013; Newman, 2020). The effects of higher global food prices on urban unrest are not uniform across countries (Hendrix & Haggard, 2015; Soffiantini, 2020), and the manner in which rising food prices work in conjunction with other societal stressors still remains unclear (Newman, 2020; Rudolfsen, 2020a).

Furthermore, people relocating towards urban areas due to climate change will also lead to social conflict being more likely to erupt in urban areas in the future (Koren et al., 2021), and it is therefore increasingly important to understand the triggers of urban unrest. Moreover, nonviolent action is to a great extent an urban phenomenon (Abbs, 2019), as well as poor people, especially in urban areas, suffer due to rising food prices (De Hoyos & Medvedev, 2009; Rudolfsen, 2020a). Between 2005 to 2007, the MENA region also experienced a substantial increase in urban poverty as a result of the sharp increase in food prices (De Hoyos & Medvedev, 2009).

To the best of my knowledge, a qualitative comparative analysis (QCA) to study the combined effects of core factors enabling food related unrest has not yet been conducted. By performing a crisp-set qualitative comparative analysis (csQCA) of 13 cities in the Middle East and North Africa (MENA) region in the years 2007/2008 and 2010/2011, I aim to contribute to the existing literature through investigating if the conditions that are most often cited as relevant factors for food-related unrest interact with each other and together create a pathway enabling the designated outcome. There are too few cases in the MENA region to conduct a quantitative analysis, and QCA accommodates the exploration of complex interrelationships. Further on, case-specific knowledge from comparative studies as well as Newspaper articles gathered through the use of Factiva can enlighten the complexities of food related unrest in a new way.

The main puzzle to solve in this thesis is: what factors led some countries in the region to experience unrest during times of high food prices, while some did not? Soffiantini (2020) has already conducted a comparative analysis of Egypt, Syria and Morocco in 2011, where the former two experienced unrest, and the latter one did not. The findings of Soffiantini (2020) indicates that the amount of food subsidies was especially important to determine the outcome in these countries, as well as their reliance on food import. She argues that these two factors contributed to the second food price shock in 2010/2011 making the fiscal burden too heavy to carry for countries that already struggled after the first shock in 2007/2008. This thesis can thus be seen as a test of these claims, expanding the number of cases to explore what patterns of factors that did or did not enable unrest in 13 of the capitals in the region during these two time periods of high food prices.

By using QCA, the study combines information from existing datasets (variable oriented) and case studies (qualitatively oriented), thus allowing more detailed information to be analysed than in purely quantitative studies. An analysis of 26 cases, consisting of 13 cities

in two time periods, will lead to a somewhat more general understanding of the phenomenon food-related unrest than less formalized comparative case studies, and will therefore contribute to the theory building still needed in this research field.

Furthermore, urban dwellers are those most likely to be affected negatively by high food prices as they are more often consumers than producers of food stuffs, posing them to have grievances over high food prices, as well as residing closer to the political centre, giving them an opportunity to voice their discontent in a manner that gets attention from the government (Hendrix & Haggard, 2015). The sampling of cases will thus happen based on data from the Urban Social Disorder (USD) v.2 dataset (Urdal & Hoelscher, 2012). In addition, I will use data on international food prices from the FAO Food Price Index (FAO, 2021). I will use these datasets as a base for the examination of unrest level in capitals in the region during the periods with high food prices, compared to the unrest level in periods with lower prices. The aim is that this will bring a further understanding of the pattern of contextual factors contributing to social, economic and political grievances that eventually enables unrest. My main research question (RQ) in this thesis is thus as follows:

RQ: "What is the combined effect of prior identified conditions enabling food-related unrest in the capitals of the MENA region?"

In order to answer this question, I will first explain some central concepts and definitions in the background chapter (chapter 2), before I move on to a review of the literature, giving an overview of where the research field is situated at the moment (chapter 3). Further on, I will explore the theoretical framework linking food prices to urban unrest (chapter 4), and then explain the research method used and the cases I will analyse, including the calibration of conditions and operationalization of key terms (chapter 5). Next, I move on to the crisp-set analysis (chapter 6) and a discussion of and conclusion on the pathways found in the solution terms (chapter 7). Finally, I will suggest recommendations for future research and clarify my contribution to the research field (chapter 8).

2. Background: Urban unrest and the MENA region

According to Bahgat et al. (2018) the rate of urban social disorder events has increased steadily over recent decades, contrary to most other forms of violent conflict. Furthermore, urban disorder is primarily associated with ongoing civil conflict, economic shocks and a lack of consistent political institutions (Buhaug & Urdal, 2013). Demarest (2014) remarks that the differentiation process between violent and non-violent protesting can be difficult, and that peaceful demonstrations quickly can escalate into rioting, due to for example repression. Therefore, I choose to not solely focus on either violent or non-violent unrest, but will include any type of urban unrest as coded in the Urban Social Disorder dataset (Bahgat et al., 2017). Hendrix and Haggard (2015) who analysed an earlier version of the same dataset (not including the MENA countries), used the terms 'protest and rioting' and 'urban unrest' interchangeably, as will I. They also stated that food prices have particular influence on the welfare of poor households that are net purchasers of food, simultaneously as the capacity of urban residents to engage in collective action is clearly much more substantial than for rural dwellers (Hendrix & Haggard, 2015).

In the USD dataset, Bahgat et al. (2017) utilize the term 'urban social disorder', meant to encompass social actions directed against a political target and/or challenging political authority. Actors may vary considerably in terms of number of participants, use of violence or not, type of political target and organizational level. The distinction between violent and non-violent events goes between 'organized violent riot' and 'spontaneous violent riot'. The latter evolves from an originally non-violent protest, whereas the former plans the use of violence (Bahgat et al., 2017). Furthermore, urban unrest is often linked to food price volatility and scarcity. These food-related shocks tend to generate nonviolent responses in urban settings, which suggests that they do not need violence to achieve effective policy responses from the governments (Koren et al., 2021). Nonviolent conflicts, such as protests or demonstrations are understudied in the political instability literature, even though they are politically relevant (Ide et al., 2020).

I choose not to focus on unrest events specifically coded as 'food riots', as media reports vary greatly from media source to media source (Sneyd et al., 2013), and the implications of the definition also are various (Rudolfsen, 2020a). As Sneyd et al. (2013) call attention to, African media reports about political grievances reaching broader than food prices to a greater extent than international media does. As food riots often are coded based on newspaper sources, it is preferable to avoid this kind of reporting bias by looking at unrest in

general instead. Heslin (2020) also argues that many 'food riots' were not directly motivated by lack of food access, but that increased food prices rather aided the mobilization process concerning several varying grievances.

Further on, Bellemare (2015) finds that food prices are significant determinants of protests and riots, in which food prices are among the stated motivations of demonstrators. However, he does not address the possibility that food prices might be related not only to food riots but to other forms of social unrest as well. Arezki & Brückner (2011), for example, find that higher global food prices are associated with an increase in anti-government demonstrations and riots in low-income countries. Furthermore, the total average of annual number of disorder events in major cities of the developing world has roughly doubled over the past sixty years (Urdal & Hoelscher, 2012). It is therefore important to investigate some of the origins of these urban disorder events.

Recently, Newman (2020) stated that only 23% of countries during a ten year period suffered from both food price-related unrest and armed conflict, even though the drivers of different types of unrest and conflict are largely the same. Furthermore, he argues that food price-related unrest tended to mostly occur in urban areas. As Newman notes, Weinberg and Bakker (2015), Smith (2014), and Hendrix and Haggard (2015), also contrast the approach of focusing exclusively on 'food riots' and uses a wider definition of unrest as basis for their research, whether food price grievances were specifically articulated or not. The findings of these scholars show a close interrelationship between heightened unrest levels and global food price rises. In addition, most urban households spend a noticeable share of income on staple food that is internationally traded, and thus their level of general wellbeing is highly vulnerable during times of increasing food prices (FAO, 2008). Conflicts with lesser intensity levels can lead to social change and indicates the presence of genuine grievances, thus it is important to analyse these events as well as armed conflict (Ide et al., 2020).

The inhabitants and governments in the MENA region were particularly vulnerable and exposed when the international food prices rose in 2007/2008 and 2010/2011 due to their status as net food importers and the people being to a larger extent consumers rather than producers of food (Maystadt et al., 2014). Regarding Egypt in particular, Soffiantini (2020) states that the sharp increase in global food prices increased the magnitude of food subsidies to such a degree that the regime was unable to uphold it to a satisfactory degree. The dependence on energy and food subsidies for consumers is overall high in this region, leading to eruption of unrest events in, among other countries, Egypt, Tunisia and Algeria during

times of food price spikes (Albers & Peeters, 2011). I therefore focus on any type of unrest in urban areas, e.g. capitals, in the MENA region.

3. Literature review

Ida Rudolfsen quite recently published a review article on the topic of unrest and food insecurity, and her article will serve as a starting point as I zoom in on the literature on food price-related unrest. Rudolfsen (2020a) examines the whole area of food insecurity literature, whereas I will focus purely on the food price-related literature. At the end of the chapter, I will present a table providing an overview of the studies and their main findings.

Rudolfsen (2020a) takes a closer look at the theoretical mechanisms of how food insecurity is linked to unrest and how to distinguish food-related unrest from other unrest events. She stresses the importance of being explicit about the definitions and assumptions of food security and unrest to facilitate comparisons of results and for teasing out under what societal conditions we can expect food insecurity to enable unrest. Rudolfsen divides the research on food insecurity-related unrest into four different categories. The first category revolves around case studies of revolutionary settings from Europe and Russia, while the second focused on the so-called "IMF riots" that occurred in various developing countries in the 1970s and 1980s. The third category examines the unrest that corresponded with food price peaks in the 2000s, aiming to analyse patterns of social unrest and their linkages to food insecurity, which will be the focus in this master thesis. The fourth category identified is primarily concerned with food production and the loss of income from agricultural yields (Rudolfsen, 2020a).

3.1 Domestic food prices

Berazneva & Lee (2013) examined 50 African countries in the period of 2007-2008 to explain the fact that fluctuations in domestic food prices are more frequent and widespread than the occurrence of unrest. They suggest that the food riots also were used to air other grievances, such as dissatisfaction with corruption, economic policies, and government efficiency. They found, controlling for the geographic location of food riots, that larger poverty rates, restricted food availability, a coastal line, urbanization, repressive regimes and more civil liberties contribute to the prospects of riots due to sharp food price increases in Africa.

Sneyd, Legwegoh and Fraser (2013) operate with relative deprivation through group comparisons (Gurr, 1970) as theoretical mechanism in their medium N-study, investigating the effect of domestic food prices on food riots in 14 African countries between 2007 and

2011. They argue that people resort to violence when food price shocks occur, motivated by some groups, for example merchants, gaining from the increasing food prices. By comparing international and African media news sources, they find that the international media frames the riots as acts unfolding due to hunger, whether the protest revolve around international commodity speculators driving the costs up or whether there is an absolute food shortage, while the African media depicts the food riots as being share of, among other things, inhabitants' political and economic grievances.

Smith (2014) examines domestic food prices in urban areas of Africa from 1990 to 2012 through a statistical study, and claims that it is a flawed assumption that changes in international commodity prices are directly reflected in domestic prices. Smith argues that heightened revenue captured by elites could lead to unrest due to grievances related to structural inequality and suggests that increasing domestic food prices elevates the risk of urban unrest and that the likelihood of unrest may be more determined by the level of repression than the extent of hardship. Finally, Smith finds that while food prices naturally fluctuate over time without causing unrest, sharp increases or sudden shocks in food prices could overwhelm the consumers and increase the likelihood for them engaging in urban unrest.

In the same manner, Raleigh, Choi and Kniveton (2015) look at local commodity prices' effect on armed civil conflict in 113 African markets in the period from 1997 to 2010. They argue, in the context they are investigating, that dynamics of food price-related instability are essentially local, and thus local markets and prices should be the focus. Furthermore, they find both a direct link between food price and conflict, where increased food prices intensify conflict rates, and conflict heightens food price. They also find an indirect effect on unrest levels through the impact of drought on food prices

Weinberg and Bakker (2015) argue that the effect of food price fluctuations on individual consumers is unique due to the high proportion of household budgets being used on foodstuffs, the visibility of price increases and the non-substitutability of food. They investigate domestic food prices and their effect on social unrest in 71 countries between 1972 and 2007, and argue that international prices are only relevant if the product in question is imported. Moreover, not all countries consume the same types of food, and several political factors may inhibit the transmission of world market prices to domestic markets.

Weinberg and Bakker (2015) further posit food prices as the most satisfactory measure of individual well-being, as it provides a more accurate assessment of food scarcity than any other indicator. The domestic policy efforts of each state are evaluated by measuring whether national agricultural policies impose costs or benefits on consumers. They further argue that increased grievances over time due to relative deprivation relating to higher food prices give consumers incentives to act against their government. Moreover, they contend that governments that prevent food price increases due to external price shocks largely avoid food price-based unrest, whereas higher food price spikes increase the perception that large segments of the population share similar grievances and have a common interest in mobilizing against the government who is solely to blame for widespread economic hardship, a suggestion in accordance with Smith (2014). They conclude that the important effect of food price on domestic unrest is found in the change in price, rather than the level of price, as these changes or shocks are more likely to be picked up as indications and trigger actions among consumers.

Van Weezel (2016) applies international food prices as a cause of exogenous shock and weight them with the countries' import structure of the most important food commodities to generate country-specific food indices. He criticizes Bellemare (2015) for loosing much country-specific information by using aggregate data, and uses a disaggregated country-month, rather than country-year, approach as Weinberg and Bakker (2015) and Arezki and Brückner (2011) also do. Van Weezel uses the country specific food indices to investigate the impact of food price fluctuations on violence in Africa and finds that food price rises are related with greater levels of violence. When increasing price values in the index, the amount of violence also increases by 1,3 incidents. Nevertheless, van Weezel concludes that the predictive power of food prices is relatively low.

Abbs (2019) argues that nonviolent mobilization is made possible in ethnically divided environments when broad cross-cutting grievances such as sharp food price increases are present as they enable nonviolent action across ethnic segregation. He examines 41 African countries (1990-2008, excluding country-years with civil war) and domestic food prices as they more accurately replicate the price that customers pay. Abbs finds solid evidence that the probability of nonviolent action in ethnically divided and politically excluded areas is being heightened by sharp food price increases.

Sánchez and Namhata (2019) performed an empirical analysis of protest participation in 31 Sub-Saharan countries in Africa, including state and individual level controls in their

study, such as the regimes leniency towards protest participation, degree of economic growth, the occurrence of armed conflict and population size. They argue that it is active participation in voluntary and community groups that heightens the likelihood of protests, rather than feelings of relative deprivation stemming from group comparisons. Overall, they find that high domestic food price variability increases the likelihood of protests, and more specifically, they find that young, educated and employed males are the most likely to protest.

Rudolfsen (2020b) states that current literature in the field of food price-related urban unrest indicates a positive relationship between the two, while grievances is an inadequate theoretical explanation for the differing outcomes of high food price influence. Her argument is that people can draw on structures for mobilizing through societal organizations, simultaneously as the organizations make high food prices a political group concern, instead of an issue to be dealt with individually. Rudolfsen concludes through her statistical test that regimes that exert moderate repression on societal organizations have an increased possibility of urban unrest given an increase in food prices, while the impact of no repression of societal organizations leads to a lower unrest occurrence. Finally, she stresses that unrest within the context of increasing food prices can be a sign of the citizens being able to voice their reaction, and thus unrest is not necessarily inherently problematic.

3.2 International food prices

Bush (2010) states that the protests in Africa and the Middle East during the 2007/2008 food price spike were triggered by rising food prices, but they were also based on factors such as inequality and repression, resistance of globalization, the spread of capitalism, and political elites gaining from the current situation. The demands of the protesters during the 2008 price spike were about more than food, as they knew that someone was benefitting from the increasing food prices driven higher by financial speculations. While it was mostly among the urban poor that riots took place, some of the protests combined urban and rural, poor and middle class in demonstrations against high food prices, local corruption, repressive governments and poverty.

Lagi et al. (2011) found that the substantial peaks in international food prices coincided with the increases in protests and riots in the MENA region in both 2008 and 2011. This pattern of events could lead to a renewed outbreak of social unrest, especially if food prices remain high. The riots could reflect both the failure of governments to address long-

standing political failings, as well as a sudden vulnerability in the population due to the rising food prices. They also presented a threshold for the FAO food price index, above which the likelihood of riots to increase. However, this threshold has later been criticized by Natalini et al. (2019) for being inaccurate due to the small sampling size.

Arezki and Brückner (2011) analyse the effect variations in international food prices have on democracy and intra-state conflict using panel data for over 120 countries in the 1970–2007 period. They find that rising international food prices led to a significant rise in political instability and social unrest in low-income countries, as well as in less democratic regimes, while there is no significant effect of food price increases in high-income countries. Further on, Arezki and Brückner (2014) investigate international food net-export price rises, suggesting that the mechanism behind unrest reactions is rooted in enlarged revenue during sharp food price increases, especially in autocratic, poor and net-exporting countries, being seized by the elite through a reduction of the political rights of the people. According to this argument, increasing prices lead to an increase in incidences of social unrest, such as riots, demonstrations, and civil conflict. Absence of redistributive measures entails high food prices to coincide with a reduction in private consumption per capita and increased income inequality. They thereby link their theoretical approach to horizontal inequalities, e.g., relative deprivation through group comparisons. Arezki & Bruückner (2014) finally find that increased international food net-export prices are positively correlated with a growth in the number of intra-state conflicts.

Hendrix and Brinkman (2013) states that those hardest hit by increasing food prices tend to be the marginalized urban poor, who often simultaneously are not represented by or engaged in societal organizations or political participation. If a state is highly repressive it may create incentives to engage in unrest due to underlying political and economic issues, but it also has the possibility to repress it and thereby hinder social upheaval when food prices rise. Through a review of the literature, focusing on the Sahel area, Hendrix and Brinkman conclude that urban unrest coincide with higher consumer prices for food and fuel and that it is usually not the most food-insecure that riot, but rather the people with relatively better access, partly because of political regime, few mechanisms for conflict management due to weak institutions, incentives for the government to shield consumers from higher international prices and lower costs to collective action. In many cases, governments are limited in how they can act, as was the case in Egypt in 2011 where subsidies accounting for 8% of the country's GDP in 2011 and became unaffordable (Hendrix & Brinkman, 2013).

Bellemare (2015) uses monthly data on the international level to examine the impact of food prices on social unrest in the period between 1999 and 2011, controlling for the effect of instances of natural disasters. He finds that increasing food prices over time leads to heightened social turmoil, while food price volatility is not connected to unrest.

Hendrix and Haggard (2015) utilize the PRIO Urban Social Disturbance database and control for urban bias in agricultural policies, polity scores, the degree of international trade openness and growth in national income (GDP) to examine 55 cities in Africa and Asia, where they argue that 92% of the world's food insecurity lies, during the time period of 1961 to 2010. They present democracies as being more prone to urban unrest as there are greater opportunity structures when regimes are more accepting of protests, and that they are less likely to favour urban consumers compared to autocracies. Hendrix and Haggard (2015) also contend that mobilized urban citizens, as they are more likely to overcome collective action obstacles and are more dependent on the market for food, are those who most often partake in social unrest during periods of increasing food prices. According to their findings, democracies are more likely to experience urban unrest than autocracies, while anocracies are more likely to experience protests when food price variability is high, as compared to democracies and autocracies. Moreover, they find that more pro-rural agricultural policies robustly covariates with urban unrest.

Natalini, Bravo and Jones (2019) used gathering of newspaper articles with simple keyword searches in open access newspapers to find articles in English that met their definition of food riots, in addition to data from the database on food riots developed by the Food Price Crisis Observatory of the World Bank (The World Bank, 2021a). Through this approach, they discovered that the causes of the violent protests they examined often were cited as either the effective or threatened removal of food subsidies. They further claim that it is credible to believe that once the price of food crosses a certain threshold, poor and politically fragile countries decide to cut subsidies, causing grievances from the populations which again can turn into food riots. They set a threshold at 140 for the deflated, annual version of the FAO Food Price Index for increased probability of food riots. According to their findings, international food prices and a country's political fragility impact the occurrence of food riots significantly, whereas national food insecurity has an insignificant impact. Their article attempts to model the complexity of the global food system, focusing on global food availability, international trade of cereals, the interaction with international price of food and the rise of social conflict by developing an Agent-Based Model (ABM) called the

Dawe Global Security Model (DGSM). The agents in their model are the 213 countries of the world, and the model simulates how a country's food production shocks can lead to a sharp increase in the international price of food, which in turn can cause food riots far from where the crisis originally took place.

Al-Shammari and Willoughby (2019) examine 19 countries in the MENA region in the period between 1991 to 2014 through econometric analysis. They find that youth unemployment and regime durability are strong predictors of unrest, and that the MENA region becomes more politically instable when exogenous food price shocks strike. Concretely, they find that a 1 per cent increase in food prices across the MENA region is associated with a 4.6 per cent increase in political instability, whereas a 1 per cent increase in school enrolment leads to a 5.6 per cent decrease in political instability, and a one unit increase in the regime durability index leads to a 74 per cent increase in political instability.

Soffiantini (2020) exemplifies the causal relationship between food insecurity and political instability through a comparative analysis of Egypt, Syria and Morocco in the Arab Spring context. She argues that the rise in food prices in 2011 intensified pre-existing social discontent, leading two out of the three countries to have political unrest as an outcome. Soffiantini considers the food price rise in 2008 as a basis of comparison, and coins food subsidies as a social bargain to diminish the effects of sharp food price increases used by all three regimes in both 2008 and 2011. She therefore suggests that the extent of success in this government policy measure could be seen as a determinator of the outcome. Further on, Soffiantini stresses that the use of food subsidies can be important in a short-term food security perspective, whereas subsidy reductions paired with investments in sustainable agriculture utilizing comparative advantages is a better long-term strategy.

According to the model constructed by Soffiantini, extreme weather events between 2010 and 2011 (independent variable) increased food insecurity in 2011 (causal mechanism), leading to political instability (dependent variable). She concludes that the governments in Egypt and Syria responded unsuccessfully to the challenges brought along by extreme weather events to the food security, while the Moroccan government managed to preserve food security and avoid revolutionary protests.

Heslin (2020) investigates how mobilization to collective violence is influenced by food access, as food price increases have not resulted in an equal distribution of riots between and within countries. This implies that an investigation of other concurrent factors could lead

to a better understanding of when and where food-related unrest can be expected to occur. Thus, Heslin performs a comparative case study consisting of two cases, attempting to identify potential pathways enabling food-related unrest. She uses comprehensive, first-hand accounts of both violent and non-violent rioting in rural West Bengal, India in 2007 and urban Dhaka, Bangladesh in 2008. By drawing on social movement literature on resource mobilization, she argues that the process of mobilizing can be understood as 'an increase of the resources available to a political actor for collective making of claims' (Tilly & Tarrow, 2015, p. 120, quoted in Heslin, 2020, p. 4).

Further on, Heslin (2020) finds that riots were largely motivated by existing, non-food-related grievances held by the communities, respectively wage-withholding in urban Bangladesh and corruption in rural India. In West Bengal, she found that food prices were able to mobilize to action by amplifying anger related to corruption, while the riots in Dhaka occurred due to the high food prices increasing the capacity for laborers mobilizing against factory owners. In times of normal food prices, the risk of demanding higher wages may be deemed too high to participate. Heslin concludes that the heightened organizational capacities in urban areas are more important to explain the differences in urban and rural rioting, rather than the level of market dependence.

Newman (2020) examines through statistical methods the incidents of social unrest between 2005 and 2015, aiming to identify whether these incidents should be interpreted as related to hunger or political grievances. He points to, among other, data from FAO (n.d.) to support his choice of international food prices instead of domestic, claiming that there is strong support for domestic and international prices being closely interwoven, for example due to an inflationary effect. Newman considers several factors contributing to food-related unrest, such as the "relevance of state capacity, human development, food security and nutrition, socioeconomic inequality, public social protection, household spending behaviour, demographic factors, urbanization, and government type" (2020, p. 301). He finds that food-related unrest events tend to occur in partial democracies with social inequalities and state fragility, and that they are more likely in urban settings than in the poorest societies. Newman therefore suggests that food-related unrest is less related to absolute hunger and poverty, and rather an expression of broader grievances.

3.3 Summary

According to this literature review, high food prices can be seen as a trigger protesters can mobilize around, but it is not necessarily the main source of grievance or sufficient on its own to lead to unrest (Bush, 2010; Heslin, 2020; Newman, 2020). I will therefore try to identify in the MENA cases which other conditions were present between the starting point of high food prices and the result of urban unrest or lack of it. The conditions identified in the literature will form the basis for my hypothesis regarding the relationship of high food prices enabling unrest. Food insecurity has increased in Egypt, Libya, and Yemen since 2008 (Ianchovichina et al., 2012), and if my assumptions, as Soffiantini's (2020), are correct, the countries who avoided significant unrest in 2007/2008 experienced it in 2010/2011 due to pressure over time. Because of the high transmittance of international food prices to the Arab countries, I will focus on global food prices in my comparative case analysis, in accordance with the arguments of Newman (2020) and Al-Shammari and Willoughby (2019). According to the literature presented in the review, some of the most common conditions that are present as well as high food prices during "food riots" are various challenging and time persistent livelihood circumstances. Comparing the claim of van Weezel (2016), that food prices have a low predictive power on unrest, to all the other studies concluding with a strong link between high food prices and the presence of unrest, I find it even more important to tease out under what conditions the relationship occurs. The purpose of my thesis is to examine the presence or absence of these conditions in each case, and what combinations of conditions that enable unrest. An overview of the studies referred to in this literature review is provided in Table 1 below.

Table 1: Studies covering literature on food price-related unrest from 2010 to 2020[1]

Studies	Food price type	Conflict type	Suggested mechanism	Main findings	Spatial & temporal domain	Control/independent variable(s)	Approach
Abbs (2019)	Domestic food price spikes	Mass nonviolent action against the government	Higher food price increases gives movements a potency to mobilize across ethnic divides by combining food price-related grievances with anti-government perceptions.	The existence of the cross-cutting grievance of food price spikes increases the prominence of nonviolent action, both vertically against the government and horizontally by creating broad coalitions.	41 African countries, 1990-2008	Poverty, population size and concentration, size of largest excluded group, travel time to nearest urban center, number of excluded groups, country size, regime types, number of peace years, national election years.	Initial emergence of nonviolent action + SCAD, country-fixed-effects logistic regression models.
Al-Shammari & Willoughby (2019)	International food prices	Various political instability indicators	The political volatility in the region is due to internal subsidiy policies for food (and energy) prices. These are difficult to maintain when international prices increase sharply.	Exogenous food price shocks impacts the political instability in the MENA region severely. Youth unemployment, regime durability and degree of democracy predicts unrest.	19 countries in the MENA region, 1991–2014	Food price index, GDP growth, population growth, trade openness, school enrolment, life expectancy, youth unemployment, democracy index, regime durability.	FAO, IMF, World Bank, Cross National Time Series Data, Polity IV Project + Pooled OLS, fixed effect and random effect approaches.
Arezki & Brückner (2014)	International food net-export price index	Intra-state conflict, including anti-government demonstrations, riots and civil conflict	Revenue seized by the elite during sharp food price increases in autocratic countries that are poor net-exporters, lead to an increase in incidences of social unrest.	Increases in the international food net-export price index are positively correlated with an increase in the occurence of unrest.	60 low income countries, 1970-2007	Different measures of democracy, time periods, estimation techniques and country-specific weather shocks.	Conflict incidence + UCDP-PRIO dataset, Crossnational Time-series Data Archive
Arezki & Brückner (2011)	International food price variations	Intra-state conflict (anti-government demonstrations, riots and civil conflict)		Increases in international food prices lead to a significant worsening of democratic institutions in low income countries, increased intra-state contestations, decreasing consumption and increasing economic divides.	120 countries, 1970-2007	Different measures of democracy, time periods, and estimation strategies.	Panel data techniques accounting for unobservable cross-country heterogeneity and common year shocks.
Bellemare (2015)	International food prices, 55 commodities	Social unrest		Food price volatility is not linked to unrest, but increasing food prices leads to increased social turmoil.	Global, 1990-2011	Alternative definitions of social unrest and volatility, real/nominal prices, commodity-specific instead of aggregated price indices, non-food-related social unrest.	Conflict incidence + Lexis Nexis, Factivasearches and SCAD dataset.
Berazneva & Lee (2013)	Domestic food price spikes/increases	Food riots (civil unrest)	Food riots occurred due to changes in or discontinuation of food entitlements.	Higher rates of poverty and civil liberties, limited food access, urbanization, coastal line and oppressive regimes heightens food riot possibility.	50 African countries, 2007-2008	Human poverty index and food production index.	Riot incidence + FAO, IFPRI, Harsch (2008), IRIN, media sources.
Bush (2010)	International food price increase	Food riots	Rising food prices (spikes) triggered riots, founded on elements like repression and inequality.	Food riots express resistance to livelihood transformations shaped by globalisation and the spread of capitalism.	Africa and the Middle East, 2007-2008		Riot incidence + various sources.
Hendrix & Brinkman (2013)	International food prices (spikes)	Civil conflict, communal conflict and urban unrest	Food-related grievances in general can motivate rebellion, whereas severe food insecurity dampens conflict behavior.	Increases in urban unrest are associated with higher food and fuel prices. Collective action paradigms, political institutions, and market structures can either diminish or intensify the influences of food insecurity on conflict.	Global, with specific emphasis on Sahel, 2007-2012	Political regime, incentives for the government to shield consumers from higher international prices, weak institutions, lower costs to collective action faced by urban populations.	Literature review.
Hendrix & Haggard (2015)	International food prices	Urban unrest	Less urban bias and higher acceptance for collective action makes urban unrest more likely in democracies than in autocracies.	The regime type shapes the effect of international food prices on urban unrest occurence. Democratic regimes are more likely to have urban unrest during sharp food price increases than autocracies.	55 cities in Africa and Asia, 1961-2010		Unrest events + PRIO Urban Social Disturbance in Africa and Asia (USDAA) dataset.
Heslin (2020)	International food prices (sharp increases)	Food riots (collective violence related to food access)	High food prices may amplify existing grievances, aiding mobilization.	Food prices were not the primary concern raised by those in the communities experiencing unrest.	Rural West Bengal, India 2007 & urban Dhaka, Bangladesh 2008	Urbanization, poverty, and regime type.	Comparative study of two sets of rioting events by the use of detailed, first-hand accounts of rioting.
Lagi, Bertrand & Bar-Yam (2011)	International food prices	Social unrest	Unrest because of increasing food prices is motivated by the government failing to secure the basic needs of its people.	Unrest due to high international food prices takes place over a certain threshold of the FAO food price index.	North Africa and the Middle East, 1990-2011		Unrest onset + News reports.
Natalini, Bravo & Jones (2019)	International food prices	Food riots (violent collective unrest)	Subsidy cuts in poor countries causes grievances in the population and may turn into (food) riots.	High global food prices, together with political fragility and international food trade, increase the probability of food riots in countries.	Global (213 countries), 2005-2013	Country fragility, exogenous food production shocks.	Statistical findings + agent-based model simulating global food market and political fragility of countries.
Newman (2020)	International food prices	Food riots and protests	Instability due to perceived food price-related grievances are based in broader political contestation.	Unrest related to food prices is more likely in urban areas where high proportions of household income is spent on food (between 40 and 50%) and is associated with partial democracy, social inequalities, and state fragility.	Societies that experienced serious food riots+protests+other incidents of social unrest, 2005-2015	State capacity, human development, food security and nutrition, socioeconomic inequality, public social protection, household spending behaviour, demographic factors, urbanization, and government type.	Descriptive statistics of global events data on food riots from Nexis searches paired with social, economic, political, and other variables for the event year.
Raleigh, Choi & Kniveton (2015)	Domestic/local food prices	Armed civil conflict	There is a direct relationship between food price and conflict, and an indirect relationship due to climate change.	Increased food prices elevate conflict rates, and conflict heightens food prices.	113 African markets, 1997-2010	Anomalously dry conditions and decreased rainfall.	Conflict incidence + ACLED dataset.
Rudolfsen (2020a)	Domestic food prices	Domestic instability/unrest	The theoretical mechanisms are underpinned by grievance-based explanations, and revolve around state, group and individual levels.	The distinction between different types of unrest and their relation to food is unclear, likewise with the relationship between theoretical definition and measurement.	18th century England & France - 2010/2011 in Africa, Asia & the Middle East.	Elite capture, food hoarding/unequal access, market liberalisation, removal of social security nets, and state inability to shield population from higher food prices and to repress.	Literature review

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[1] This table is inspired by similar tables in Rudolfsen (2020a, pp. 925–928) and Theisen (2008, p. 806)

Studies	Food price type	Conflict type	Suggested mechanism	Main findings	Spatial & temporal domain	Control/independent variable(s)	Approach
Rudolfsen (2020b)	Domestic food prices	Urban unrest	People can draw on structures for mobilizing through societal organizations, simultaneously as the organizations make high food prices a political group concern.	Unrest due to higher food prices depends on the level of state repression of societal organizations.	41 countries in Africa, 1990-2014	Population, GDP per capita, national election months, a measure for time elapsed since last unrest event & country- and time-fixed effects.	Quantitative analysis of V-dem data combined with data from SCAD.
Sánchez & Namhata (2019)	Domestic food prices	Social unrest/ protests	Protest participation likelihood increases concurrently with activity in community groups. Protest participation requires resources and networking.	Higher cereal production and higher access to hygiene facilities decreases likelihood of protests, whereas high variability in domestic food price heightens the likelihood of protests, especially among young, educated and employed males.	31 sub-Saharan African countries, 2005-2015	Polity score, GDP growth, occurrence of armed conflict & total population size.	Afrobarometer data, multilevel mixed logistic regression model to account for all four dimensions of food security: availability, access, utilization and stability.
Smith (2014)	Domestic food prices	Social unrest	Elite capture of heightened profits could enhance structural inequality grievances and lead to unrest.	Increasing domestic food prices heighten the possibility of urban unrest, especially spontaneous outbreaks, in a given month.	Urban areas of Africa, 1990-2012	International grain prices, rainfall scarcity, regime type, share of urban population/youth, GDP, life expectancy/infant mortality rate, elite capture.	Unrest events + SCAD dataset
Sneyd, Legwegoh & Fraser (2013)	Domestic food prices	Food riots		International media depicts riots as events provoked by hunger, whereas African media portray food riots as being part of factors such as political and economic grievances.	14 African countries, 2007-2011		Riot incidence + Factiva, Google News, and the all-Africa database.
Soffiantini (2020)	International food prices	Political instability	Spikes in international food prices leads to an enhancement of preexisting frustration and decrease in opportunity cost of rebellion due to increased weight of subsidies inhibiting regimes from reducing food prices locally.	Rising food prices elevated pre-existing social discontent, initiating protests in Egypt, Syria and Morocco.	Egypt, Morocco & Algeria, 2010-2011	Extreme weather events, high level of subsidies, high dependency on food import, shortage of natural resources, vulnerable financial situation.	Process-tracing, comparative case study.
van Weezel (2016)	Domestic food prices	Civil unrest		Food price rises are connected to increased levels of violence.	45 African countries, 1990-2011	Civil unrest spillover, regime type, GDP and population size.	Violent events + SCAD dataset.
Weinberg & Bakker (2015)	Domestic food prices	Social unrest	High share of household budget used on food, visibility of price rises and lack of substitutes motivates consumers to protest their government when food prices rise.	There is a positive relationship between rising food prices and social unrest.	71 countries, 1972-2007	Regime type, domestic policy efforts, urban population, ethnic fractionalisation, economic growth, income.	Conflict onset + Crossnational Time-series Data Archive

4. Theoretical framework

Abbs (2019) argue that there is a distinct difference between violent and non-violent mobilization and that civil war mechanisms are unsuitable to explain mass nonviolent mobilization (Chenoweth & Lewis, 2013). He refers to Nepstad (2015), who points to three broad determinants of nonviolent action: vertical and horizontal mobilization on widely held anti-government grievances, coalitions between groups, and room to organize. Armed opposition typically only needs to recruit a few hundred fighters, while nonviolent resistance needs several thousand, where a cross-cutting issue as food price spikes come in useful to facilitate the mobilization (Abbs, 2019).

There are two main components of theoretical arguments within the food price-related unrest literature, namely relative deprivation and opportunity (Rudolfsen, 2020a; Sánchez & Namhata, 2019). In this chapter I present the theoretical framework linking high food prices to urban unrest. I will explore how grievances and opportunity structures lay the foundation for food price-related unrest, starting with grievances such as feelings of relative deprivation (Gurr, 1970), and then moving on to opportunity structures enabling group mobilization (Tilly, 1978). Finally, in chapter 4.3, the hypotheses based on relevant conditions identified in the food riot literature and their relation to the outcome "unrest" will be presented.

4.1 Grievances to motivate

In his book *Why Men Rebel* (1970) Gurr explored why people engage in protest and political violence and how regimes respond. He presented his hypothesis of relative deprivation, a state occurring when reality diverge from what you perceive you are entitled to or from what you expect. The feeling of being deprived can stem from individual intertemporal comparisons, when your prospects for life now are worse than they were before, or from comparisons between individuals or groups (Hendrix & Haggard, 2015). The concept of frustration-aggression begins with relative deprivation, leading to frustration, motivating aggression and finally leads to violence. The concept also states that the more frustration, the more aggressive the response directed against the source of frustration is. The factors that determine the scope, intensity, duration and form of the political violence that can be performed are influenced by the anticipated gain, opportunity and fear of retribution (Gurr, 1970). Gurr further stated that aggression is not necessary or sufficient to drive violence, and that greed also can be a motivator. However, the motivating capacity of frustration is much

stronger than greed, and that frustration-aggression is the "primary source of the human capacity for violence" (1970, p. 36).

Relative deprivation can manifest itself in three main patterns. The first one is described as 'decremental deprivation', where the expectations of a person remain constant simultaneously as capabilities decreases. The second type is 'aspirational deprivation', where the expectations increases while capabilities remain a constant. The third type is coined 'progressive deprivation', where expectations continue to grow, while capabilities for a certain time grow accordingly, but then suddenly decreases and creates a discrepancy motivating use of violence, especially if an improvement of their situation appears within reach (Gurr, 1970).

Similarly, food price increases can signify a decline in societies highly impacted by them (Newman, 2020). The theoretical foundation for arguing that higher food prices relate to unrest points, as Rudolfsen (2020b) remarks, to relative deprivation grievances related to this decline in life prospects and actual living conditions. Furthermore, Gaub (2012) claims that the interplay between root causes or conditions, catalysts and triggers of conflict are important to analyse instability in the MENA region. In addition to structural conditions prepositioning unrest, abrupt changes, such as sharp food price increases, works as a catalyst and exacerbates the situation before a final trigger enable unrest events. Newman articulates the same effect by describing increasing food prices as a "lightening rod for a broad range of grievances" in societies already predisposed to unrest (2020, p. 305). In the same manner, Lagi et al. (2011) argue that the government becomes the target of peoples' aggression during times of increased food prices because it is seen as responsible for the sharp deterioration in living conditions for the population.

4.2 Opportunities to mobilize

In *From Mobilization to Revolution*, Tilly (1978) studies the concept of mobilization and collective action. Hendrix and Haggard (2015) refer to this work as a political opportunity structure useful to determine whether grievances lead to widespread mobilization.

The constraints and choices in the surroundings of an actor possibility of collective can give solid indications on the actors' possibilities for collective action. The term collective action is compounded by five sub terms, which are "interest, organization, mobilization, opportunity and collective action itself" (Tilly, 1978, p. 1-10). Mobilization is the process of acquiring collective control over an organization's resources. It allows people to act on shared

interests without leaving their own. Opportunity relates to the group development of its relationship with the world around them, and can lead to collective action when the patterns of opportunity, interests, mobilization and organization changes (Tilly, 1978).

If a mobilization program is to be successful, the components of accumulation of resources and increased collective support for a common claim needs to be achieved simultaneously. There are three different types of mobilization (Tilly, 1978). The defensive enables mobilization through pooling of resources into a group when there is a common enemy threatening from outside the group. The offensive mobilization works through a more top-down structure, as the group seizes an opportunity to pursue goals related to their interests. The last type, preparatory mobilization, is structured even more top-down than the offensive type, as the group needs to pool their resources as a response to possible opportunities or threats in the future (Tilly, 1978). As mobilization always is more costly for the poor and powerless than for the rich and powerful, the only mobilization type they are likely to pursue is the defensive one, where their current situation threatens their already scarce resources and freedom of choice. However, such groups are more likely to participate in collective action repeatedly once they have mobilized in the first place, as they seek to attain additional improvements in their livelihoods (Tilly, 1978).

To concretize how opportunity can be affected, van Weezel (2016) suggests, through pointing to Collier and Hoeffler and Fearon and Laitin respectively, that food price increases can constitute in two ways. First, when a shock impacting incomes negatively lowers the opportunity costs related to use of violence (1998) and second, when further burden is put upon governments, restraining ability to act upon and deter threats, signalling an opportunity for others to challenge their power (2003). In the protest mechanism, protesters weigh risks against anticipated gains and available resources. Sustaining a rebellion depends critically on the support by the local population in terms of e.g., sheltering and funding, and increasing food prices is a type of symbolic issue that can facilitate horizontal mobilization across intra-ethnic and interethnic divides (Hendrix & Haggard, 2015; Tilly, 1978). Hendrix and Salehyan (2012) states that for the greater part of aggrieved actors, rebellion is mostly not a possible option due to the aforementioned costs. These findings indicate that protest occur more naturally and frequently than rebellions, another reason for investigating unrest more broadly than focusing purely on violent riots.

4.3 Conditional effects of food prices on unrest

The first step in a Boolean analysis is to identify the relevant causal conditions (Rihoux & Ragin, 2009). In this thesis, the hypotheses will be formulated around the conditions identified in the literature on food related unrest and on the basis of theoretical assumptions. The hypotheses will also be formulated in the form of a statement about necessity and/or sufficiency, as recommended in the QCA literature (Berg-Schlosser & Meur, 2009).

Food prices is a useful measurement for grievances due to the unique nature of food as a non-substitutable good, and as the most basic of all necessities (Berazneva & Lee, 2013; Hendrix & Haggard, 2015). Abbs (2019) argue that this distinct and symbolic nature provides both common intergroup grievances, which ease horizontal mobilization, and vertical mobilization through short-term incentives to protest the government.

Rudolfsen (2020a) divides the different approaches to the theoretical mechanisms between food insecurity and unrest in individual, group and state level explanations. I will take a closer look at those mechanisms relating increasing food prices to unrest. On the individual level, there is a suggestion that absolute deprivation may lead to unrest when people cannot access food and become so desperate that they protest to acquire it (Rudolfsen, 2020a). I will however not focus on this aspect in my thesis, as several scholars have pointed out that if this mechanism were to be correct, we would see a very much higher number of protests as there are more incidents of hungry people in this world than there are number of protests (Berazneva & Lee, 2013; Demarest, 2014; Newman, 2020; Rudolfsen, 2020a; Sánchez & Namhata, 2019). On the other side of the individual level, increasing food prices can lead to a temporal deprivation due to a larger share of household budget being spent on food, eventually leading to unrest (Rudolfsen, 2020a). On the group level, the increasing food prices can lead to unrest through three different pathways. Either through elite capture of increased revenue, or through increasing income inequality, or, lastly, through merchant hoarding. Elite capture and merchant hoarding is likely to trigger resentment in other segments of the population. On the state level, it is government inaction that can lead to unrest when food prices increase, either through a lack of state intervention or through a lack of state repression (Rudolfsen, 2020a).

As an example of both increased grievances and opportunities, democracies may witness more protest not only as a result of the viability of protests, but also because of

policies they pursue with respect to accommodating the rural sector, where most of the voters reside (Hendrix & Haggard, 2015). For autocratic leaders, the urban dwellers are more important to appease, as they have the possibility to inflict more damage "closer to home" than the rural population. Moreover, protests are more tolerated and expected in democratic societies, whereas it is perceived more as a threat to the regime in autocracies (Hendrix & Haggard, 2015). Newman (2020) also argues that sharp rises in food prices, both domestic and international, can have a mobilizing and exacerbating effect in societies where pre-existing broader social and political grievances are present. Furthermore, Bara (2014) found that complex interaction between both incentives and opportunities probably is the most covering explanation for conflict. With these findings in mind, conditions that are covering both opportunities to mobilize and the motivational effect of grievances are included in this thesis.

When investigating a specific outcome, in this case the enabling of urban unrest, the questions of necessity and/or sufficiency are central for the production of the outcome. A condition is *necessary* for an outcome if the outcome cannot occur in the absence of the condition, or if the condition is always present when the outcome occurs, but it alone does not cause the outcome and is therefore not sufficient. A condition is *sufficient* for an outcome if the outcome always occurs when the condition is present, but the outcome could result from other conditions also (Berg-Schlosser et al., 2009). For a condition to be sufficient, there should not be a single case that shows the condition, but not the outcome (Schneider & Wagemann, 2012).

In the following, I will present my hypotheses on the conditions impacting the occurrence of unrest. The hypotheses revolve around conditions derived from research articles focusing on either the global scale, Africa (including MENA countries) or solely the MENA region.

4.3.1 Anocracy and Civil Society Organization (CSO) repression

Several studies find that the positive effect of increasing international food prices on unrest is dependent upon regime type (Al-Shammari & Willoughby, 2019; Berazneva & Lee, 2013; Hendrix & Brinkman, 2013; Hendrix & Haggard, 2015; Newman, 2020; Smith, 2014; van Weezel, 2016; Weinberg & Bakker, 2015). For example, Newman (2020), found that unrest most often occurred in democratic or partly democratic regimes in countries classified

as low- and middle-income. Additionally, there is found no effect of global prices in autocracies (Hendrix & Haggard, 2015), indicating the importance of lack of opportunity structure due to severe regime restraints (Hendrix & Brinkman, 2013).

However, when Al-Shammari and Willoughby (2019) investigated 19 countries in the MENA region, they found that a higher degree of democracy in general lead to less unrest, whereas in a focused study of Egypt, Libya, Syria, Tunisia and Yemen, they find the opposite. Their finding for these countries suggests that a higher degree of democracy leads to more unrest. As the operationalization of the conditions later will show, there are no full democracies in the case sampling. Further on, Newman (2020) coins political transition periods as vulnerable to food price shocks. The instability of the implications of a democratic regime on unrest resonates with the civil war literature, where intermediate regimes are found to be most prone to civil war, while autocracies are more stable, and full democracies are the most stable regimes (Gleditsch et al., 2001).

Besides regime type, the organizational capacity and degree of repression of CSOs has also been found to be an important determinant of food-price related unrest (Bush, 2010; Heslin, 2020; Rudolfsen, 2020b; Sánchez & Namhata, 2019). Sanchez and Namhata (2019), for example, found that the likelihood for protest participation increases as individuals become more active in voluntary and community groups. In accordance with the finding of Bara (2014) that both opportunity and grievances matter, organizations both provide opportunity structures to mobilize along and the fomenting of grievances into a group concern possible to act upon (Rudolfsen, 2020b). The main finding of Rudolfsen (2020b) is that the probability of high food price-related unrest decreases when societal organizations are repressed. However, she also finds that moderately repressive regimes allowing a certain degree of CSO freedom have "the highest predicted change in probability of urban unrest when food prices rise" (Rudolfsen, 2020b, p. 13). These arguments form the base for hypothesis (H) 1.

> **H1:** In periods of high food prices, repression of CSOs in combination with anocracy enables unrest. This condition is expected to be sufficient, but not necessary to produce the outcome.

4.3.2 Executive corruption and elite capture

The link between political corruption, increasing food prices and unrest related to them is complex. According to some reports, the lack of access to power created by conditions such as corruption and police abuse undermines citizens' confidence in the government (Newman, 2020; Sneyd et al., 2013). Corruption and organized crime are often widespread in fragile states (OECD, 2008). Moreover, corruption is seen as the central issue of the Arab world, according to its inhabitants. It affects all aspects of society, and it is often regarded as the problem most complained about (Whitaker, 2009 in Al-Rawashdeh et al., 2013).

Smith (2014) argues that increased economic pressure could lead people to seek relief through attempts of removing incompetent and corrupt governments, as well as several scholars have found that food riots are more probable in countries that are already politically fragile (Brinkman & Hendrix, 2011; Natalini et al., 2015), with poor state capacity, instances of elite capture and corruption in the government (Arezki & Brueckner, 2014; Bush, 2010; Heslin, 2020; Newman, 2020; Smith, 2014; Sneyd et al., 2013). Similarly as with corruption, elite capture can incite unrest due to structural inequality grievances (Newman, 2020; Smith, 2014). Some empirical examples of elite capture or corruption driving unrest can be found in Yemen, where elite power concentration and political exclusion enabled use of violence in 2011 (Brinkman et al., 2013), and in Egypt, rising food prices coincided with corruption allegations and led to several casualties in June 2008 (Berazneva & Lee, 2013).

In the hypothesis, H2, these circumstances will be measured by data on executive corruption. This choice is made because of the extensiveness and severity of the corruption perception in the literature, and executive corruption thus captures this type of elite capture better than a measure for petty corruption. Elite corruption is defined as corruption perpetrated by elites, such as members of the government, and encompasses both theft and elite capture (Lewis, 2021). Lewis (2021) further found that elite corruption has a positive impact on protest occurrence, while police corruption did not have the same effect. He argues that the mechanism behind corruption and protests consists of broadly salient governance and economic grievances, particularly well-suited for facilitating mass mobilizing processes.

H2: In periods of high food prices, executive corruption enables unrest. This condition is expected to be sufficient, but not necessary to produce the outcome.

4.3.3 Large share of household income spent on food

Newman (2020) found that food price-related unrest often arose in urban areas where a large share of household income was used on food, particularly for those spending more than 40%. The average population in the MENA region uses a high share of their household income on food, leaving them highly affected with diminished purchasing power when food prices rise (Soffiantini, 2020). The high percentage of income spent on food varies greatly between countries often experiencing unrest, 35% or more, and developed countries with less than 10% of income on average spent on food (Sternberg, 2012). The mechanism behind large share of household income spent on food enabling unrest is partly the same as with corruption, that when people are economically pressed, the inadequacy of their government becomes more visible. At the same time, household income spent on food is a measure close to the likely protest participants who experience increased food prices, and it is therefore useful to examine how underlying conditions may enable unrest.

H3: In periods of high food prices, a large share of household expenditure spent on food enables unrest. This condition is expected to be sufficient, but not necessary to produce the outcome.

4.3.4 Food import as a large share of merchandise import

The countries in the MENA region are especially vulnerable to international food price increases because of their high food import dependency (Lampietti et al., 2011). Lack of arable land and water resources combined with rising food demands makes this region innately import dependent. As world market prices increases, the costs of these imports becomes extremely high (Sadler & Magnan, 2011). An example from Berazneva and Lee (2013) illustrates this, as Egypt imports wheat from several countries all over the world, including Russia, France, USA and Kazakhstan. As noted earlier, the most important foodstuffs that are imported in the MENA region are beef, maize, rice and wheat, except for rice in Egypt, beef in Sudan and Turkey, and beef and wheat in Syria (Maystadt et al., 2014).

The hypotheses on household spending and food import also cover food subsidies. Subsidies are used to protect customers from high international food prices and can lead to massive unrest when food prices rise and the governments fail at upholding stable consumer prices (Hendrix & Brinkman, 2013). However, if the country has a low degree of food import because they produce a lot of food themselves, the need for subsidies will not be so great as

for countries which have a high degree of food import. Simultaneously, spending a large share of household budgets on food implies that the subsidies are not functioning well enough to dampen the effects of high food prices on the individuals. Thus, using household budget spending and share of food import as conditions cover the same suggested mechanism as the subsidy condition would have done.

The suggested mechanism behind this hypothesis is that a high degree of food import makes high international food prices more difficult to handle for the regime and can thus enable unrest by people blaming the government for not being able to shield them properly.

H4: In periods of high food prices, food import dependency enables unrest. This condition is expected to be sufficient, but not necessary to produce the outcome.

4.3.5 The interplay of several conditions

As the literature on food price-related unrest have presented multiple explanations for this positive relationship, I include a hypothesis testing the most important conditions cited above together.

H5: In periods of high food prices, the simultaneous presence of all the conditions above enables unrest. These conditions are expected to be necessary to produce the outcome.

5. Methods

5.1 Background on Qualitative Comparative Analysis (QCA)

The effects of increasing food prices on provoking conflict is largely agreed upon in the research literature (Raleigh et al., 2015; Weinberg & Bakker, 2015). Ide (2017) states that the routes that connect climate change to food prices and conflict are contingent on local complexity, context dependent and not well understood exclusively through statistical research. Ide points to Collier et al. (2010), and states that this calls for multimethod research as inadequate diversity in choice of methods has been found to be a driver of inadequate or inconsistent empirical findings. The suggestion of using QCA to clarify contradictory findings and specify theoretical models on the connection between resource scarcity and conflict (Theisen, 2008), should receive more attention, according to Bretthauer (2015). This study aims to fill this gap and applies csQCA to identify combinations of risk factors that are contributing to urban unrest.

Therefore, this study applies a comparative research design between capitals in the Middle East and North Africa region during two periods of high food prices: 2007/2008 and 2010/2011. The purpose of this examination is to identify the interaction and presence of conditions outlined as important for food related unrest in the literature, with the end goal of identifying patterns for the unrest events occurring in these cases. Even though the cases examined using QCA are simplified through the transformation into configurations (a set of conditions enabling the outcome), the complexity of the cases are still preserved as the conditions are "envisaged in a combinatorial way" (Rihoux & Lobe, 2009, p. 228) Further on, the same process of data collection and data analysis will be conducted for all cases to ensure a systematic approach. The research method applied for analysing this comparative case study is crisp set QCA (csQCA).

A condition is a "factor which is used to explain the outcome" (Schneider & Wagemann, 2012, p. 323). The conditions are used to group cases into set relationships, where the link between each condition and the specified outcome forms an interpretable pattern (Schneider & Wagemann, 2010). Differing from quantitative studies, the sufficiency or necessity of conditions is what decides the degree of causality, rather than independent variables effecting the dependent variable (Rubinson et al., 2019). Another distinction between variables and conditions are that variables are often defined in terms of nouns, such as GDP, whereas a condition must be defined by an adjective, such as High GDP. This makes

it possible to identify whether cases examined belongs in a set relationship or not (Rubinson et al., 2019).

Ragin (1987), who first presented the research design of QCA, describes the Boolean approach as a methodological middle road. The Boolean approach consists of a minimization process where the end goal is to find the most simplified expression associated with the given outcome. In csQCA this process begins with dichotomization of data, defining the set relationships of the cases examined. The most important feature of QCA, according to Ragin, is an ability to examine a large number of cases, while also addressing complex, and possibly asymmetrical, causal conjunctures. The comparative research strategy of QCA is also able to produce parsimonious explanations and evaluate competing explanations, as well as investigating cases both as wholes and as parts. QCA allows the user to combine both qualitative and quantitative case information from several sources and is therefore useful for investigating the topic of food-related urban unrest. The method chapter introduces the logic behind QCA, and more specifically the application of csQCA, which will accommodate the exploration of when and how conditions during high food prices may enable urban unrest.

According to Berg-Schlosser et al., the logical reasoning behind the QCA method builds on Mill (1843) and refers to either establishing the "absence of a common cause or effect even if all other circumstances are identical", or "eliminating all similarities but one" (2009, p. 2). In social sciences, it is almost impossible to establish a universal causal relationship, but QCA represents a useful step toward rejecting unconnected factors and imitate causal conditions in society by narrowing down the occurring of conditions across several cases (Berg-Schlosser et al., 2009).

There are four types of QCA, 1) multivalue QCA (mvQCA), 2) temporal QCA (tQCA), 3) fuzzy-set QCA (fsQCA) and 4) crisp-set QCA (csQCA). mvQCA deals with multinomial conditions, tQCA intends to include the temporal order in which conditions occur as possibly causally relevant, while fsQCA uses partial degrees of presence or absence of a condition measured with a score from 0 to 1. In this paper, I use crip-setQCA. CsQCA only has membership values of 1 and 0, indicating either complete membership or complete non-membership in a set (Schneider & Wagemann, 2012). Thus, csQCA uses dichotomization of the relevant conditions in order to produce first a truth table containing all the possible combinations of conditions (configurations) based on the current data, leading to the decision upon the outcome result for each configuration based on a consistency threshold, before finally producing a minimal formula or a parsimonious solution from the outset of the

complex expressions (Rihoux & Ragin, 2009). In other words, the researcher attempts to apprehend each case as a combination of causal and outcome conditions, which can subsequently be reduced to the different groupings of conditions that are necessary and/or sufficient to produce the given outcome (Moses & Knutsen, 2019).

Ide et al. (2020) argue in their study that when the outcome is binary, in their case the onset of flood-related unrest or not, conditions should be binary as well. In this thesis, the outcome is also dichotomized. The outcome unrest is coded as 1 (present) if the amount of unrest recorded for each case is at the same level or higher in the high food price period than in the reference period with lower food prices. If the amount of unrest is lower than in the reference period, the outcome is coded as 0 (absence of unrest). Accounting for different degrees of unrest, fsQCA could also have been a well-suited research design for this thesis. However, due to time constraints, the method supervisors available, and a lack of courses instructing this type of method, the use of csQCA was perceived as more feasible.

QCA is particularly well fitted for the study of high food prices and urban unrest because of the incorporation of equifinality, conjunctural causation and asymmetrical causation. This method allows the identification of several different pathways leading to the same outcome, as well as an examination of the interplay between different contextual factors (Ide et al., 2020), such as the regime type anocracy and repression of CSOs combined with high import dependency, high share of household income spent on food and a severe prevalence of corruption. The concept of equifinality implies that one outcome can have mutually nonexclusive explanations represented by different paths of combined conditions, while conjunctural causation involves the fact that conditions do not necessarily exert their impact on the outcome in isolation from one another, but sometimes must be combined in order to reveal causal patterns (Schneider & Wagemann, 2012). Finally, asymmetrical causation implies that varying presence and absence of conditions impact the outcome or absence of outcome differently from case to case, and therefore might require the running of a separate analysis (Schneider & Wagemann, 2012).

According to Thomann and Maggetti (2020), QCA fathoms more than traditional deductive testing of hypothesis. When conducting the analysis of a truth table, the researcher makes a choice between aiming for maximal complexity or a more reduced variant expressing parsimony (Meur et al., 2009). In the software program *fsQCA* (Ragin & Davey, 2016) used in this study, this choice is conducted in a standard analysis by deciding whether to interpret the complex, parsimonious or intermediate solution term. The choice should be made in a

transparent manner consistent with the pre-existing theoretical knowledge in the research field (Meur et al., 2009). Through the different solution terms, the researcher is able to potentially identify support for only specific components of a hypothesis, how the hypothesis possibly could be expanded and explored further, whether any of the components should be rejected, and finally identify the cases most relevant for a more thorough analysis within the cases (Thomann & Maggetti, 2020). The outputs for the solution terms of the standard analysis are interpreted in terms of consistency and coverage (Ragin, 2017). The following explanations of consistency and coverage are based on Ragin (2017, pp. 60-61), for the sake of maintaining a precise understanding of the concept. "Consistency (with sufficiency) measures the degree to which solution terms and the solution as a whole are subsets of the outcome", whereas the coverage scores "measures how much of the outcome is covered (or explained) by each solution term and by the solution as a whole" (Ragin, 2017, p. 60). In each solution term, there are three different types of coverage scores. The solution coverage score "measures the proportion of memberships in the outcome that is explained by the complete solution", the raw coverage score "measures the proportion of memberships in the outcome explained by each term of the solution", and the unique coverage score "measures the proportion of memberships in the outcome explained solely by each individual solution term (memberships that are not covered by other solution terms)" (Ragin, 2017, p. 61).

Arriving at explanations in csQCA can further consist of resolving contradictions, where the purpose is to develop an explanatory model with as few contradictions as possible (Marx et al., 2013). Several contradictions in a truth table could indicate issues with the model specification, possibly originating from high heterogeneity within the cases, errors of measurement or omitted explanatory variables (Marx et al., 2013). The solution to these obstacles lies in the iterative process, where a return to theoretical and case knowledge may help the researcher specify the model more accurately (Marx & Dusa, 2011).

According to Skaaning (2011) scholars questioning the use of QCA, such as Clarke (2020), have argued that QCA results are very dependent upon the researcher's discriminatory power. Responding to this critique, the advocates for this method have accentuated that the thorough knowledge of theory and specific cases reduces the potential problem (Ragin & Rihoux, 2004; Schneider & Wagemann, 2010). Coding of data are always dependent upon the judgement of the person performing it, and a reduction of the margin of error can be achieved by theoretical guidance, shared common practices and full transparency related to the iterative calibration of both conditions and outcome (Rihoux et al., 2009). Further on, Skaaning

emphasizes the importance of systematically conducting tests on the sensitivity of QCA results on three crucial issues, namely the "calibration of raw data into set-membership values, the frequency of cases linked to the configurations, and the choice of consistency thresholds" (2011, p. 391). I have therefore strived towards adhering to both the standards of transparency and robustness testing when performing the analysis in this thesis.

5.1.1 Peace and conflict studies in QCA

Ide et al. (2020) found in their QCA study of 34 cases that triggering events, such as droughts or water cuts, taking place where deep grievances over social or economic situations in autocratic regimes often predicted outbreaks of nonviolent conflicts. This resonates with the findings of several of the articles on food-related unrest, where food prices are not cited as the main source of grievances, but rather as a trigger catalysing widespread mobilization.

According to Bara (2014), the ability to map out multiple paths leading to conflict is the most valuable quality of the QCA method for peace and conflict studies. She claims that even though statistical methods can use interaction terms and thus examine more intricate relationships, these methods are not able to identify neither these relationships nor the possible equifinality of the pathways leading to conflict.

Gaub (2012) posits that several economic and social factors contributed to unrest in the MENA region prior to and during the so-called Arab spring, and that understanding the complex interplay between the different factors is crucial to analyse triggers of this contestation. QCA is thus a method well suited for shining a light on the interplay between several factors. Ide et al. (2020) refers to Schneider & Wagemann (2012) to explain that "QCA is geared towards detecting complex causal relations that are dependent on the simultaneous presence and/or absence of several factors (conjunctural causation), rather than analysing linear relations or interactions between only two or three variables."(Ide et al., 2020, p. 87). Another attribute to QCA suitable for analysing links between topics such as climate and conflict is the ability to combine quantitative and qualitative data through the calibration process (Ide, 2017), as will be demonstrated in the following subchapters.

5.2 Data collection and operationalization

I will now present the research design applied in this thesis. The design should account for the selection of cases, conditions and definition of the outcome, the strategy for the analysis and possible threats to validity. I rely mainly on Rihoux and Ragin (2009) and Schneider and Wagemann (2012) to guide the research approach. The cases investigated in this study are 13 capital cities in the MENA region. These cities are observed twice, first in 2007/2008 and second in 2010/2011, resulting in a total of 26 cases to examine. These cities are Algiers, Amman, Ankara, Baghdad, Beirut, Cairo, Damascus, Khartoum, Rabat, Sanaa, Tehran, Tripoli, and Tunis. The conditions selected in this study are based on earlier research on food price-related unrest in the world or in the region, and their findings of which factors that are crucial in the relationship between high food prices and unrest. The dichotomized values on each condition for each city is set by information from statistical datasets paired with case specific information guiding the thresholds set.

5.2.1 Case selection

Investigations of food prices' effect on unrest should focus on low- and middle-income countries where the potential to eat properly is likely to have been severely impacted by the rising food prices due to a lacking ability to buffer (Arezki & Brückner, 2011; Natalini, Bravo & Jones, 2019; Soffiantini, 2020). According to Newman (2020), unrest events explicitly related to food price grievances did not mainly occur in the very lowest developed or poorest societies, but rather in the societies experiencing improvements preceding the food-related unrest, in accordance with the suggestions of Sanchez and Namhata (2019) and Hendrix and Brinkman (2013). He further states that almost half of the countries experiencing food riots could be categorized as medium developed. Further on, Al-Shammari and Willoughby (2019) claims that political unrest in the MENA region is highly affected by international food price shocks.

Capitals in the MENA region covered by USD v2 (Bahgat et al., 2018) were originally Abu Dhabi, Algiers, Amman, Ankara, Baghdad, Beirut, Cairo, Casablanca, Damascus, Istanbul, Kuwait City, Rabat, Riyadh, Sanaa, Tripoli and Tunis. However, the earlier capitals Casablanca and Istanbul were excluded to avoid the same coding of conditions with country level data twice. In addition, Abu Dhabi, Riyadh and Kuwait City were excluded because of

their classification as high income countries (The World Bank, 2021d)[2]. High income countries are excluded from the study, as the effect that high food prices have on low- and middle-income countries is not expected to be found in countries where they easily can make the high prices disappear through subsidies (Arezki & Brückner, 2011). Sternberg (2012) notes that Israel and the United Arab Emirates did not experience unrest during the Arab Spring, and attributes this to the countries being high income, with a low share of household income spent on food, as well as having income levels high enough to adapt to the increasing food prices. The divide between high and middle/low-income countries is also evident from an example in the unrest data for the original case sampling for this study, where the only unrest events for both Riyadh and Kuwait City are two single events in March 2011, but otherwise no unrest events in previous or later months for several years were registered.

I am further on looking at capitals for the same reason as Ide et al. (2020) uses nightlight emission data to choose their cases. In general, where there is a larger population density, there is also a larger opportunity for organizing protests. The capitals included in USD v2 are all cities with more than 100,000 inhabitants (Bahgat et al, 2017). In addition, capitals are often the political centre of a country, and groups oppositional to the government often reside there. Access to information is also better, and even though an increasing amount of rural dwellers also are net food buyers (Aksoy & Hoekman, 2010), the people most dependent on purchasing their food still reside in urban areas. Berazneva & Lee (2013) also points to having a coastal line as a possible contributing primer for unrest, and all the 13 countries examined in this study have a coastal line, to a greater or lesser degree.

Regarding number of cases corresponding with number of conditions, the aim has been to maintain a ratio that does not lead to too many logical remainders, which often becomes the case when there are too many conditions for a small amount of cases, as the possible combinations of all the conditions rises exponentially (Marx & Dusa, 2011). As Berg-Schlosser and Meur frames it, "the fewer the number of "causes" we need to explain a phenomenon of interest, the closer we come to the "core" elements of causal mechanisms" (2009, p. 27).

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[2] See Appendix 1 for an economic categorization of the MENA countries

5.2.2 Impacts of international food price rise

According to Rob Vos, director at International Food Policy Research Institute, global food prices, if they are prolonged, can fuel political unrest and conflicts in vulnerable countries where other social challenges already are present (Undheim, 2021).

With domestic prices, it is difficult to compare the same time periods, as each country will reach a prospective price limit at different times. I therefore choose to look at international food price data from FAO. For international food price data, earlier «food riot» studies have used several different sources, such as converting global prices into a domestic price proxy using a consumer tax equivalent (CTE) based on data from the World Bank (Weinberg & Bakker, 2015). However, as markets are increasingly integrated in the world economy, international price shocks transmits quickly to domestic markets countries who are low-income and dependent upon food import (FAO, 2010; Hendrix et al., 2009). Further on, results from Maystadt et al. (2014) confirm that the high exposure of MENA countries to international food price fluctuations is an important cause of vulnerability for peaceful transitions in the region.

Earlier studies on food price-related unrest have used either IMF, UNCTAD or FAO food price indices. The three indices all utilize volume-weights for food baskets consisting of approximately the same commodities, and can therefore be used almost interchangeably, apart from the time periods they cover (Hendrix & Haggard, 2015). As the FAO Food Price Index (FPI) contains data from 1990 and up until today, it is suitable for the years investigated in this thesis. Moreover, the FAO price data is registered from the first day of each month, securing that the price level comes before the registration of the unrest events. Most importantly, using the FAO FPI facilitates a comparison of the data used by Natalini et al. (2019) to establish a food price threshold above which the likelihood for unrest increases, with current data used in this study. Instead of looking at price indices for only one or a few types of foodstuffs separately, I choose to look at one overall food price, because the food commodities price includes the most important foodstuffs that are imported in the MENA region, like beef, maize, rice and wheat. The exceptions to the import of these four foodstuffs are rice in Egypt, beef in Sudan and Turkey, and beef and wheat in Syria (Maystadt et al., 2014).

Rising global food prices are contributing to high food inflation in many countries, even though the pass-through of rising global prices does not translate into an immediate and proportionate rise in domestic price levels, due to various factors such as a weakening dollar,

domestic infrastructure and price stabilization policies (The World Bank, 2008). However, Peeters and Albers (2011) have found that the international price level and domestic price level in the MENA region are following the same development trends, as illustrated in the graph "World food prices and food prices in North African and Middle Eastern countries". According to their graph, there is a small delay in the effect of international food prices on MENA prices. However, MENA prices do not decline but continues to gradually increase, whereas the curve for international food prices more clearly shows sharp spikes.

5.2.3 Reference period thresholds and operationalization of the outcome UNREST

Identifying the unrest periods examined in this thesis, the FAO Food Price Index (FPI) (FAO, 2021) was used as a starting point to define the months where international food prices were high. With a threshold of 100 on the current FAO FPI (with 2014-2016 as baseline years), it coincides with the threshold of 140 that Natalini et al. (2019) identified in their paper, showing that after this threshold being reached, there would be an increase in probability for a random country experiencing a food riot with >1[3]. Having a consistent price threshold for all countries enables a comparison between the cases and the years they are examined. It is probable that either a delay in effect of the high food prices or an accumulated effect of several months with elevated prices eventually leads to unrest in the year subsequently following the price threshold.

Between 2007 and 2011, there are three periods according to the FAO FPI where prices are above the threshold for several consecutive months. The first period being from August 2007 to September 2008, the second from November 2009 to January 2010, and the third from July 2010 to November 2014. The second period was of such a short length, simultaneously as most of the literature focuses on the unrest connected with either the financial crisis in 2007/2008 and/or the Arab Spring in 2010/2011. Therefore, I chose to examine the first and the latter period more closely.

Further on, the Japanese investment bank Nomura identifies prolonged price peaks as the risk factor for increasing food-related unrest (Subbaraman et al., 2010), in addition to the finding that food price volatility has no effect on prevalence of unrest, indicating that short-term changes to food prices will not be reacted upon immediately (Bellemare, 2015). I am

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[3] See Appendix 2 for an elaboration of this threshold and data on food prices

therefore looking at a twelve-month period after the price threshold is reached to allow the effect of the international price rise to manifest itself locally. The effect of a one-month lag was also tested, and for the shorter unrest periods, the calculation of a one-month lag made a significant difference[4]. However, for a period of 12 months, the one-month lag is not needed for the international food price effect to manifest itself locally. Given that it might take time to allocate resources and structure a social movement, a whole year after the price peak will both allow for protesters to organize and react to the prices, simultaneously as the presumed grievances due to the high food prices have time to manifest and spread between people. Before the event with Mouhamed al Bouazizi in Tunisia in December 2010 (Lagi et al., 2011), that in retrospect has been seen as sparking the Arab Spring movement, the food prices had already been above the limit set by Natalini et al. (2019) for half a year. Thus, we can assume that prolonged periods with higher food prices can lead to increasing frustration through an exhaustion mechanism and thus enable unrest over time. For the preceding months after the food price threshold was reached, I argue that it was the high food prices that served as a catalyst for unrest, triggering a reaction to long-term underlying conditions.

For the level of unrest to be seen as high for each city, and therefore with a higher degree of likelihood for it being connected to the food price limit attainment, I have calculated a reference period with the level of unrest for each city during a year with food prices below the limit. I have chosen the 12 preceding months to August 2007 for the first unrest period, when the price limit was reached, to minimize the chance of policy changes or major development changes impacting the unrest levels. For the second unrest period, I have chosen November 2008 to October 2009 as a reference period, as these months are the only ones covering a whole year below the food price threshold before the second unrest period began in July 2010. The unrest level in 2010/2011 might have been higher due to the preceding unrest in 2007/2008, and I therefore calculated separate reference numbers for the two time periods. If the amount of unrest in the twelve months examined are equal to or higher than in the reference period, the case is coded as 1 (presence of unrest). All else equal, with an amount of unrest lower than the reference period, the case is coded as 0 (absence of unrest). If the reference period amount of unrest events is 0 and the amount during the twelve months examined is 0, the case is also coded as 0 (absence of unrest).

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[4] See Appendix 4 for data on the other unrest period calculations

In addition, I controlled for the possible impact of national elections (Marshall et al., 2013; Newman, 2020) in the months included in both the reference periods and unrest periods examined. I used Factiva (Dow Jones, 2021) to search for newspaper articles referring to election-related unrest in the MENA capitals. There was little to no indications that national elections impacted the unrest data to such an extent that the truth table value changes from 0 to 1 or vice versa, given the threshold set for each city. The only exception was for unrest events in Tehran in June 2009 (Bower et al., 2009). However, when excluding these events from the reference period and calculating a new threshold for unrest for Tehran in the second unrest period (2010/2011), the amount of unrest still failed to surpass the threshold amount. I therefore changed the unrest threshold for the reference period back to its original value. All the cities in the sample therefore keep their original values on unrest events. I found a discrepancy between events recorded for the actual cases in USD v2 versus unrest recorded in other research papers. This might be due to the strict geographic delimitations used in USD, as they do not code events if they appeared close to a city, this might explain why some newspapers report election-related unrest in a capital city, while USD has recorded no unrest for the given city in the same month (Bahgat et al., 2017).

In the tables below, the unrest amount for the respective number of months, the unrest event threshold for unrest period 1 (2007/2008) and 2 (2010/2011), and the dichotomized truth table value are presented. "Unrest1" refers to unrest in the first high food price period I am investigating, whereas "Unrest2" refers to the second period. "Amount" refers to the number of events registered for each city by the USD dataset.

Table 2: Unrest 12 months: period 1, 2007/2008

	Unrest Aug07-Jul08	**Unrest+1 month lag, Sep07-Aug08**	**Threshold**	**Amount**	**Amount+ 1 month lag**
Algiers	1	1	1	1	1
Amman	1	1	1	1	1
Ankara	1	0	2	2	1
Baghdad	0	0	45	19	17
Beirut	0	0	15	7	7
Cairo	1	1	2	2	2
Damascus	1	1	1	1	1
Khartoum	1	1	1	3	3
Rabat	0	0	0	0	0
Sanaa	0	0	2	1	1
Tehran	0	0	4	2	2
Tripoli	0	0	0	0	0
Tunis	0	0	0	0	0

Data source: Urban Social Disorder dataset v2 (Urdal & Hoelscher, 2012)

Table 3: Unrest 12 months: period 2, 2010/2011

	Unrest Jul10-Jun11	**Unrest+1 month lag, Aug10-Jul11**	**Threshold**	**Amount**	**Amount+ 1 month lag**
Algiers	1	1	1	7	7
Amman	1	1	0	2	2
Ankara	1	1	1	3	3
Baghdad	0	0	30	17	16
Beirut	1	1	0	3	3
Cairo	1	1	3	7	10

Damascus	1	1	0	5	7
Khartoum	1	1	0	4	4
Rabat	1	1	0	5	5
Sanaa	1	1	1	15	17
Tehran	0	0	12	9	10
Tripoli	1	1	0	4	4
Tunis	1	1	0	5	6

Data source: Urban Social Disorder dataset v2 (Urdal & Hoelscher, 2012)

5.4 Calibration of conditions

According to Rihoux & Lobe (2009), the setting of thresholds should be conducted based on theory, within-case knowledge, and informed judgement. After the setting of threshold for each condition, the conditions are dichotomized and coded as either 1 (present) or 0 (absent). As QCA is based on set theory, this calibration process defines for each case their belonging to a certain set relationship of cases (Ide et al., 2020). This calibration process will be elaborated upon in the following subsections. The conditions calibrated below are chosen on background of the hypotheses presented in chapter 4.3, and the reasoning behind the selection of variables operationalizing these conditions coincide with the background information provided for the hypotheses.

5.4.1 Calibration of the macro condition "High degree of anocracy and repression" (ANR)

The macro condition ANR consists of the regime type ANOCRACY combined with the extent of Civil Society Organization (CSO) REPRESSION. They both load on the same dimension (Berg-Schlosser & Meur, 2009), measuring opportunity for mobilization, and the degree and effect of CSO repression is likely dependent on the regime type. These two conditions are therefore suitable to merge into one macro condition. If both anocracy and repression are present, I expect to see an increase in unrest, because of the likelihood of the regime not having enough capacity to repress properly. If the regime is an autocracy, the

active repression is less necessary, because people are most likely aware that any attempt on unrest will be futile. Likewise with the regime type full democracy and no repression, there are other arenas present to channel dissent than through unrest events. I therefore created a macro condition where 0=dictatures/anocracies that do not repress CSOs, while 1= anocracies that do repress. There are no full democracies present in the case sampling, and no countries with a full score on CSO liberties. This reasoning was used for the merging process:

Table 4: ANR macro condition merging criteria

	Anocracy	Non-anocracy
Repression	1	0
Non-repression	0	1

As none of the cases had no repression of CSOs, the combined score of ANOCRACY and REPRESSION had the same score as the original ANOCRACY condition.

The condition REPRESSION was operationalized according to the V-dem codebook description of the variable *CSO repression (C) (v2csreprss)* answering the question "Does the government attempt to repress civil society organizations (CSOs)?". The answers are classified in five categories from 0-4, covering respectively Severely, Substantially, Weakly and No[5] (Coppedge, Gerring, Knutsen, Lindberg, Teorell, Altman, et al., 2021, p. 193).

The threshold of the condition was set at 0-3, as 0-3 indicates the presence of repression, while 4 indicates no repression present.

The condition ANOCRACY was also operationalized according to the V-dem codebook description of the variable *Regimes of the world – the RoW measure (D) (v2x_regime)* answering the question: "How can the political regime overall be classified considering the competitiveness of access to power (polyarchy) as well as liberal principles?" The answers are classified in four categories from 0-3, covering respectively Closed autocracy, Electoral autocracy, Electoral democracy and Liberal democracy[6] (Coppedge, Gerring, Knutsen, Lindberg, Teorell, Altman, et al., 2021, p. 283).

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[5] For a full description of each variable, see Appendix 3.

[6] For a full description of each variable, see Appendix 3.

The threshold of the condition was set at 1-2, as 1-2 indicates the presence of anocracy or partial democracy, while 0 and 3 respectively indicate either an autocracy or a full democracy.

Table 5: Calibration of ANR condition

Case	2007 amount	2010 amount	Truth table value 2007	Truth table value 2010
Algiers	1	1	1	1
Amman	0	0	0	0
Ankara	2	2	1	1
Baghdad	1	1	1	1
Beirut	1	2	1	1
Cairo	1	1	1	1
Damascus	1	1	1	1
Khartoum	1	1	1	1
Rabat	0	0	0	0
Sanaa	1	1	1	1
Tehran	1	1	1	1
Tripoli	0	0	0	0
Tunis	1	1	1	1

Data source: V-dem dataset v11.1 (Coppedge, Gerring, Knutsen, Lindberg, Teorell, Alizada, et al., 2021)

5.4.2 Calibration of the condition "Strong presence of corruption" (COR)

The condition CORRUPTION was operationalized according to the V-dem codebook description of the variable *Executive corruption index (D) (v2x_execorr)* answering the question: "How routinely do members of the executive, or their agents grant favors in exchange for bribes, kickbacks, or other material inducements, and how often do they steal, embezzle, or misappropriate public funds or other state resources for personal or family use?" The answers are classified on an interval from 0 to 1, ranging from low to high, where lower

scores indicates a better situation, whereas higher scores indicate a worse situation[7]
(Coppedge, Gerring, Knutsen, Lindberg, Teorell, Altman, et al., 2021, p. 298)

The threshold of the condition was set at 0.6, because the countries below this threshold fare comparatively worse than other countries in the region. This is also consistent with information from other sources, where Egypt (Al-Shammari & Willoughby, 2019; Bush, 2010), Tunisia (Al-Shammari & Willoughby, 2019), Algeria (Al Jazeera, 2011), Iraq and Sudan (Forbes, 2008) are deemed as highly corrupt countries.

Table 6: Calibration of COR condition

Case	2007 amount	2010 amount	Truth table value 2007	Truth table value 2010
Algiers	0,697	0,697	1	1
Amman	0,35	0,35	0	0
Ankara	0,404	0,511	0	0
Baghdad	0,774	0,772	1	1
Beirut	0,678	0,678	1	1
Cairo	0,804	0,804	1	1
Damascus	0,892	0,892	1	1
Khartoum	0,733	0,733	1	1
Rabat	0,262	0,262	0	0
Sanaa	0,901	0,901	1	1
Tehran	0,707	0,707	1	1
Tripoli	0,844	0,844	1	1
Tunis	0,761	0,735	1	1

Data source: V-dem dataset v11.1 (Coppedge, Gerring, Knutsen, Lindberg, Teorell, Alizada, et al., 2021)

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[7] For more elaboration on this variable, see Appendix 3.

5.4.3 Calibration of the condition "Large share of household income spent on food" (HOH)

The condition HOUSEHOLD refers to a large share of household income being spent on food. The condition was operationalized with numbers on "Food and non-alcoholic beverages", calculated as a share of "Individual consumption expenditure by households". As no datasets with information on 2007 numbers were available, I chose to rely on 2005 numbers to fill in the 2007 amount row. The closest year available to 2010 was 2011, and as the numbers varied more between each city than from year to year, I determined that it was more important to include this condition with the only numbers available than to exclude the condition from the analysis[8].

The threshold of the condition was set at 40-60% in accordance with the research by Newman (2020), in which household expenditure on food above this share may entail an impoverishment so extreme that the ability to protest decreases, whereas a share lower than 40% contributes to less grievances. None of the cases had household food expenditure share above 60%. Several institutions and researchers were contacted to obtain numbers for this condition for 2007 and 2010, but unfortunately none of the attempts were successful. I have therefore gathered information from other sources than The World Bank International Comparison Program for the cases lacking numbers. These are marked with footnotes explaining their sources.

Table 7: Calibration of HOH condition

Case	2007 amount	2010 amount	Truth table value 2007	Truth table value 2010
Algiers	43,7[9]	43,6	1	1
Amman	31,6	28,3	0	0
Ankara	24,9	24,1	0	0
Baghdad	38,9	14,4	0	0
Beirut	30,5	20,6[10]	0	0
Cairo	44,7	41,6	1	1
Damascus	44,5	41,9[11]	1	1

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[8] A more thorough description of the work related to obtaining these data can be found in Appendix 5, part 4.2
[9] (Rosen et al., 2008)
[10] (BankMed - Market & Economic Research Division, 2014)
[11] (Central Bureau of Statistics, N.D.)

Khartoum	55,5	51,6	1	1
Rabat	38,9	38,7	0	0
Sanaa	44,1	48,5	1	1
Tehran	25,9	15,8	0	0
Tripoli	13,9[12]	15,7[13]	0	0
Tunis	28,9	24,8	0	0

Data source: 2007 amount (The World Bank, 2005), 2010 amount (The World Bank, 2017a)

5.4.4 Calibration of the condition "High import dependency" (IMP)

The condition IMPORT refers to a large amount of food imports as a share of total merchandise imports.

The threshold for the condition was set at 12. The reasoning behind this threshold is the research of Soffiantini (2020), who referred to Algeria and Libya as large food importers in the region, whereas Morocco was less vulnerable than the other countries. Syria and Egypt were also deemed by Soffiantini as high-risk countries that experienced political instability due to, among other reasons, their import dependency, whereas Turkey is defined to be less import dependent than other countries in the region (INRA, 2015).

Table 8: Calibration of IMP condition

Case	2007 amount	2010 amount	Truth table value 2007	Truth table value 2010
Algiers	19,8	16,3	1	1
Amman	15	16,2	1	1
Ankara	3	4	0	0
Baghdad	18,8	3,9[14]	1	0
Beirut	16,1	15,6	1	1
Cairo	20,4	19,1	1	1
Damascus	12,6	21	1	1
Khartoum	5,3	25,9	0	1

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[12] (Central Bank of Libya, 2019)
[13] 2009 numbers due to lack of data availability (Chinganya et al., 2012)
[14] 2008 numbers due to lack of data availability

Rabat	12,3	11,5	1	0
Sanaa	25	30,7	1	1
Tehran	1,9[15]	15,2	0	1
Tripoli	16,1	12,2	1	1
Tunis	9,8	9,4	0	0

Data source: World Development Indicators (Knoema, 2021)

Each of the conditions, anchored in the relevant literature, and their expected contributions to the outcome UNREST I are presented in Table 9 below.

Table 9: The conditions and their expected contributions

Condition	Reference	Expectation	Calibration
ANOCRACY+ REPRESSION (ANR)	(Al-Shammari & Willoughby, 2019; Hendrix & Haggard, 2015) + (Berazneva & Lee, 2013; Bush, 2010; Hendrix & Brinkman, 2013; Rudolfsen, 2020b; Sánchez & Namhata, 2019)	Less restraints and less urban bias enable more unrest. Severe repression of civil society organizations in combination with anocracy will enable unrest.	Cases with anocracy, also repressing CSOs, were calibrated [1]. Cases with full autocracy or full democracy, also repressing CSOs were calibrated [0]. No cases without CSO repression were identified.
CORRUPTION (COR)	(Arezki & Brueckner, 2014; Bush, 2010; Newman, 2020; Smith, 2014)	A strong presence of elite capture and corruption are sources of grievances and can therefore enable unrest.	Cases with a score higher than 0.6 according to the Executive corruption index were calibrated [1]. Cases with a score lower than 0.6 were calibrated [0].
HOUSEHOLD (HOH)	(Newman, 2020; Weinberg & Bakker, 2015)	A large share of household expenditure spent on food makes the effect of high food prices felt more intensely and will therefore increase	Cases with between 40-60% of household expenditure spent on food were calibrated [1]. Cases with less than 40% spent on

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[15] 2006 numbers due to lack of data availability

		grievances enabling unrest.	food were calibrated [0]. No cases with more than 60% spent on food were identified.
IMPORT (IMP)	(Maystadt et al., 2014; Soffiantini, 2020)	A high degree of food import makes high international food prices more difficult to handle and can thus enable unrest by people blaming the government for not being able to shield them properly.	Cases with more than 12% food imports as a share of merchandise imports were calibrated [1]. Cases with less than 12% food imports were calibrated [0].

6. Results: Conditions present when urban unrest strikes

After the calibration process is completed, all the possible combinations of conditions, the cases, and their set membership can be presented in a truth table. Next, the logical minimization procedure (data analysis) is conducted by a software program (Ide et al., 2020). The data analysis in this thesis was carried out by use of the software fsQCA (Ragin & Davey, 2016) following standards for good practices in QCA, according to Rihoux and Ragin (2009) and Schneider and Wagemann (2012), as described in the next subsection.

6.1 Crisp-set analysis

First, I performed an analysis of necessity of the raw data table containing each case, condition and outcome. In the test of necessity table, consistency signifies the degree to which the causal condition is a superset of the outcome, whereas coverage signifies the empirical relevance of a consistent superset. In order to be deemed a necessary condition, the consistency score must be above 0.9 (Rubinson et al., 2019). None of the conditions were necessary for the outcome to be present. The macro condition ANOCRACY+REPRESSION came closest to being necessary with a score of 0.76. The condition with highest coverage is HOUSEHOLD. The complete results of the necessity analysis can be seen in Table 10.

Table 10: Test of necessity, original analysis

Outcome: UNREST		
Conditions tested	**Consistency**	**Coverage**
ANOCRACY+REPRESSION (ANR)	0.764706	0.650000
CORRUPTION (COR)	0.705882	0.600000
HOUSEHOLD (HOH)	0.529412	0.900000
IMPORT (IMP)	0.705882	0.666667

In the second step, I computed a truth table from the raw data table, assigning a value on the outcome of 0 (absence of unrest) or 1 (presence of unrest) for each truth table row (see table 11). With four conditions, there are 2^4=16 possible configurations (combinations of conditions) for the cases. Out of the 26 cases examined, there were eight rows with logical remainders, and eight rows with configurations. Each case can be a full member of only one of the truth table rows in csQCA. Logical remainders appear in truth table rows where a combination is theoretically possible, but there is not enough empirical evidence (cases with a membership) to conduct sufficiency tests of them (Schneider & Wagemann, 2012). In csQCA,

often analysing a medium sample of cases, the frequency threshold is often set on at least one case per truth table row (Schneider & Wagemann, 2012).

Out of the eight configurations identified in total, four of them consistently led to unrest. To qualify as an explanation for the outcome UNREST, the consistency of each configuration must be above 0.8 (Rubinson et al., 2019). The consistency measure refers to the degree of relation between the outcome and empirical evidence in every single row (Ragin, 2017). For the other four potential combinations, there were too many contradictions between the cases with the same dichotomous values, and therefore the consistency level ended up too low to be interpreted in the csQCA analysis.

As presented in *Table 11*, there are several rows with a consistency score below 1, indicating contradictions within the membership cases. For example, Sanaa07 is the contradicting case leading row four to have a consistency score below 1. In the row beneath, Rabat07 is the one case differing from the others. Following the advice of Thomann and Maggetti (2020) and Marx et al. (2013) as outlined in chapter 5.1, a return to theory and case information could help improve the model. This is attempted in chapter 6.2, where various tests of robustness are conducted, such as including a fifth condition and an adjustment of thresholds where cases are situated in the very close to the determined boundary. After attempting adjustments of the model, a large number of contradictory configurations could also indicate that the hypothesis or theory should be considered falsified (Berg-Schlosser et al., 2009). In this instance, the number of cases related to corroboration or falsification are an important factor (Berg-Schlosser et al., 2009).

Table 11: Truth table, original analysis

ANR	COR	HOH	IMP	UNREST	N[16]	Raw consistency	Cases
1	0	0	0	1	2	1	Ankara07 [1], Ankara10 [1]
0	0	0	0	1	1	1	Rabat10 [1]
1	1	1	0	1	1	1	Khartoum07 [1]
1	1	1	1	1	9	0.888889	Algiers07 [1], Cairo07 [1], Damascus07 [1], Sanaa07 [0], Algiers10 [1], Cairo10 [1], Damascus10 [1],

[16] «N» refers to number of cases

							Khartoum10 [1], Sanaa10 [1]
0	0	0	1	0	3	0.666667	Amman07 [1], Rabat07 [0], Amman10 [1]
0	1	0	1	0	2	0.5	Tripoli07 [0], Tripoli10 [1]
1	1	0	0	0	4	0.25	Tehran07 [0], Tunis07 [0], Baghdad10 [0], Tunis10 [1]
1	1	0	1	0	4	0.25	Baghdad07 [0], Beirut07 [0], Beirut10 [1], Tehran10 [0]

As a third step of the csQCA process, I conducted a standard analysis using the Quine-McCluskey algorithm, producing three different solutions. These solutions consist of a logical statement with a description of groupings of the conditions sufficient for the stated outcome (Ragin, 2017), in this case UNREST. The three solutions produced are complex, parsimonious and intermediate, as presented respectively in Tables 12, 13 and 14. The complex solution makes use of no logical remainders to produce a minimal formula, whereas the parsimonious solution makes use of all the logical remainders applicable. The intermediate solution, however, makes use solely of logical remainders corresponding with the theoretical knowledge of the researcher (Rihoux & Lobe, 2009). By conducting a standard analysis in the *fsQCA* software, the researcher influences this process by choosing whether the conditions are expected to contribute to the outcome when they are present or absent (Ragin, 2017). In this thesis, all the conditions are formulated in such a way that they are expected to contribute to the outcome when present.

Table 12: Complex solution, original analysis

Complex solution term (configuration)	Raw coverage	Unique coverage	Consistency	Cases with membership
~COR*~HOH*~IMP	0.176471	0.176471	1	Ankara07 [1], Ankara10 [1], Rabat10 [1]
ANR*COR*HOH	0.529412	0.529412	0.9	Algiers07 [1], Cairo07 [1], Damascus07 [1], Khartoum07 [1], Sanaa07 [0], Algiers10 [1], Cairo10 [1], Damascus10 [1],

				Khartoum10 [1], Sanaa10 [1]
Solution coverage	0.705882			
Solution consistency	0.923077			

Table 13: Parsimonious solution, original analysis

Parsimonious solution term (configuration)	Raw coverage	Unique coverage	Consistency	Cases with membership
HOH	0.529412	0.529412	0.9	Algiers07 [1], Cairo07 [1], Damascus07 [1], Khartoum07 [1], Sanaa07 [0], Algiers10 [1], Cairo10 [1], Damascus10 [1], Khartoum10 [1], Sanaa10 [1]
~COR*~IMP	0.176471	0.176471	1	Ankara07 [1], Ankara10 [1], Rabat10 [1]
Solution coverage	0.705882			
Solution consistency	0.923077			

Table 14: Intermediate solution, original analysis

Intermediate solution term (configuration)	Raw coverage	Unique coverage	Consistency	Cases with membership
~COR*~IMP	0.176471	0.176471	1	Ankara07 [1], Ankara10 [1], Rabat10 [1]
ANR*COR*HOH	0.529412	0.529412	0.9	Algiers07 [1], Cairo07 [1], Damascus07 [1], Khartoum07 [1], Sanaa07 [0], Algiers10 [1], Cairo10 [1], Damascus10 [1], Khartoum10 [1], Sanaa10 [1]
Solution coverage	0.705882			
Solution consistency	0.923077			

Through the csQCA analysis producing the solution terms, I have identified two potential pathways enabling the outcome UNREST in the intermediate solution configuration. I am choosing to interpret the intermediate solution, as it aims to strike a balance between the complex solution being too complex for interpretation, and the parsimonious solution risking to rely on logical remainders assumptions that are not theoretically or practically possible (Schneider & Wagemann, 2012). By the guidance of theoretical knowledge, the intermediate

solution should be the one interpreted when the researcher can determine whether or not the logical remainders should be assumed as linked to the outcome (Schneider & Wagemann, 2012).

The two pathways identified in the intermediate solution are -COR*-IMP and ANR*COR*HOH. The first equation reads as absence of CORRUPTION combined with absence of IMPORT enables the outcome UNREST, whereas the second reads as presence of ANOCRACY+REPRESSION, combined with presence of CORRUPTION and presence of HOUSEHOLD enables the outcome UNREST. The first one has very low coverage scores, covering only three cases, while number two has considerably higher scores, covering nine cases in total. As all solution paths matter in QCA due to the acknowledgement of equifinality (Schneider & Wagemann, 2012), I will discuss them both.

The latter solution term is most in line with the theory of the field, containing an unstable regime type, high level of CSO repression and high perception of corruption, and a large share of household expenditure spent on food, however it contains a contradiction. The case of Sanaa07 is the deviant one creating a consistency score below 1. To try to resolve this contradiction, I return to the case information. Looking at the economic categorization of Sanaa, it is the only case that is defined as Low income in 2007[17]. Further, returning to the theory of the field, one explanation of this deviance could be that the population of Sanaa were simply too poor for the mechanism of progressive deprivation (Gurr, 1970) to be activated, as several researchers have suggested that it is not the most impoverished who are the first to act out on high food prices, but rather those who have experienced some improvements and now are witnessing a deterioration (Sanchez and Namhata, 2019; Hendrix and Brinkman, 2013; Newman, 2020).

Further on, the first solution term presented in *Table 14* appears to be contradicting the theory in the field. The absence of corruption combined with the absence of high import dependency enabling unrest seems counterintuitive. To try to explain this solution term, I return to the case information again. Ankara is the case in the sampling coming closest to being a full democracy in both 2007 and 2010 with a score of 2 in the Regimes of the World index (Coppedge, Gerring, Knutsen, Lindberg, Teorell, Alizada, et al., 2021), see *Table 5*. This could entail a higher acceptance for protests (Hendrix & Haggard, 2015), and the enabling of unrest might have a different dynamic behind it than in the anocracies coded with

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[17] See Appendix 1

a score of 1 (Coppedge, Gerring, Knutsen, Lindberg, Teorell, Alizada, et al., 2021) in *Table 5*. As for Rabat10, an explanation of its belonging in this set term could lie in the fact that the case is situated very close to the threshold of 40% of the condition capturing share of household budget spent on food, see *Table 7*. This threshold is set in accordance with the research of Newman (2020), as the only empirically tested source giving a concrete number on how large the share is when an enabling of unrest can be expected. Further on, Soffiantini (2020) argues that it is the policy changes undertaken by Morocco before 2011 that leads to an improvement in the food security situation there, thus Morocco should have been more at risk in 2007 than in 2010, oppositional to the findings in the USD v2 data (Urdal & Hoelscher, 2012) used in this thesis. Rabat also lies in borderland of the threshold set for the condition capturing high import dependency, however, an adjustment of this threshold would be done contrary to existing theory (Soffiantini, 2020).

A final step to consider for resolving contradictions in this solution term could be to return to the case selection phase, and possibly exclude the deviant cases (Rihoux & Lobe, 2009). However, this would result in a lower case to condition ratio, possibly weakening the analysis. Besides, the region as a whole has been deemed as vulnerable to high food prices (Maystadt et al., 2014), and it is therefore valuable to understand the dynamic of as many cases as possible.

An overall evaluation of the results compared to the hypotheses tested indicates that the region is no monolith in what combination of conditions that are enabling unrest in times of high food prices. As the IMPORT condition is not included as present in any of the solution terms, I conclude that **H4: "**In periods of high food prices, food import dependency enables unrest. This condition is expected to be sufficient, but not necessary to produce the outcome", should be rejected. Additionally, **H5:** "In periods of high food prices, the simultaneous presence of all the conditions above enables unrest. These conditions are expected to be necessary to produce the outcome", should be rejected, as the assumption that all the conditions present at once would enable unrest was not found to be correct. The other hypotheses, **H1**, **H2** and **H3**, respectively covering regime type combined with CSO repression, a high perception of executive corruption and a high share of household budget spent on food should be kept. The assumption that none of the conditions would be necessary on their own to enable the outcome UNREST has proven correct.

According to Schneider and Wagemann (2012), the analysis of the presence of an outcome and the negative outcome should always be conducted through two separate analyses, due to the acknowledgement in QCA of asymmetrical patterns, where the combinations of causes enabling absence of unrest are not necessarily identical to the combinations of causes enabling presence of unrest (Schneider & Wagemann, 2012). Before computing the truth table, I conducted a test of necessity:

Table 15: Test of necessity, analysis of negative outcome

Outcome: -UNREST (absence of)		
Conditions tested	**Consistency**	**Coverage**
ANOCRACY+REPRESSION (ANR)	0.777778	0.350000
CORRUPTION (COR)	0.888889	0.400000
HOUSEHOLD (HOH)	0.111111	0.100000
IMPORT (IMP)	0.666667	0.333333

The test shows that none of the conditions had a score indicating necessity for the outcome to be present, however the consistency score of 0.89 for the CORRUPTION condition came close to the threshold of 0.9 (Rubinson et al., 2019). Next, I present the truth table:

Table 16: Truth table, analysis of negative outcome

ANR	COR	HOH	IMP	-UNREST	N	Raw consistency	Cases
1	1	0	0	0	4	0.75	Tehran07 [1], Tunis07[1], Baghdad10 [1], Tunis10 [0]
1	1	0	1	0	4	0.75	Baghdad07 [1], Beirut07 [1], Beirut10 [0], Tehran10 [1]
0	1	0	1	0	2	0.5	Tripoli07 [1], Tripoli10 [0]
0	0	0	1	0	3	0.333333	Amman07 [0], Rabat07 [1], Amman10 [0]
1	1	1	1	1	9	0.111111	Algiers07 [0], Cairo07 [0], Damascus07 [0], Sanaa07 [1], Algiers10 [0], Cairo10 [0], Damascus10 [0], Khartoum10 [0], Sanaa10 [0]

1	0	0	0	0	2	0	Ankara07 [0], Ankara10 [0]
0	0	0	0	0	1	0	Rabat10 [0]
1	1	1	0	0	1	0	Khartoum07 [0]

Table 16 portrays very low consistency scores and had eight rows of logical remainders. As there were no truth table rows displaying a consistency score above 0.8, it was not possible to conduct the standard analysis, due to errors related to the Quine-McCluskey algorithm. In addition, prime implicants had to be resolved before attempting to conduct the standard analysis. Prime implicants are the end products of the logical minimization process (Schneider & Wagemann, 2012). Some prime implicants can be logically redundant, and unless they are of substantive interest, they can be dropped from the solution term to obtain the formula that is most parsimonious. Sometimes prime implicants are tied, meaning that one of them, but not both, can be dropped without diminishing the solution term's truth value. In situations like these, there exists more than one most parsimonious solution term (Schneider & Wagemann, 2012). My first attempts to resolve the tied prime implicants were guided by empirical case knowledge and theory. However, in the end all possible choices were exhausted, without being able to conduct a standard analysis without errors.

These errors could derive from not enough variation in the values of the conditions between 2007 and 2010, or perhaps an omitted condition, such as a spill over effect from unrest in a neighbouring country (van Weezel, 2016). However, this would be difficult to operationalize. A look at the truth tables produced indicates that a case in 2007 often is the outlier, while the other cities in the set relationship are observed in 2010 or situated in a more politically unstable country in 2007. Moreover, this challenge could be conditional of the threshold for unrest. Tehran and Baghdad have for example experienced large numbers of unrest prior to the food price spikes, that the unrest levels in 2007/2008 and 2010/2011 do not reach above the threshold, whereas Tunis and Beirut have had more consistent unrest levels[18]. Another possibility causing the error in the performance of the standard analysis could be that there are simply no perfect sufficient patterns in the cases[19].

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[18] See Appendix 4 for numbers on unrest events
[19] This reflection is based on an answer from Thomann in the Facebook group Qualitative Comparative Analysis and Fuzzy Sets on November 19, 2017
https://www.facebook.com/groups/483487988377003/posts/1597957856930005

6.2 Test of robustness

I conducted several tests of the model, both by adjusting the thresholds for UNREST and by subtracting and adding various conditions, to check if the model could be improved by specifying certain elements, in accordance with recommendations from Skaaning (2011). The purpose of these adjustments were to reduce the number of contradictions and logical remainders, as recommended by Marx et al. (2013).

One of these tests were whether a condition combining numbers on Gross domestic product (GDP) per capita Purchasing Power Parity (PPP) and oil export versus oil import could solve the contradictions and help add explanatory power to the model. The data on the HOUSEHOLD condition do not display a large variation and may be based on inaccurate numbers due to survey collection, and it could therefore be fruitful to include GDP per capita PPP and differ between oil exporting and non-exporting countries as well, as a more reliable economic measure. Moreover, these conditions are included due to the fact that international food and oil prices often are closely interlinked (Hendrix & Brinkman, 2013), and therefore oil exporting countries will fare better with high food prices than oil importing countries. GDP per capita PPP can also be seen as a proxy for subsidies, as it measures the country's economic power.

According to Sdralevich et al. (2014), oil importing countries in the MENA region handled low economic growth and high commodity prices globally by increasing spending on food and fuel subsidies, leading to severe fiscal deficits in the countries dependent on oil import. Furthermore, several researchers have suggested the importance of measures such as low GDP, higher rates of poverty, and a lack of economic growth to explain unrest reactions linked to high food prices (Abbs, 2019; Berazneva & Lee, 2013; Heslin, 2020; Sánchez & Namhata, 2019; van Weezel, 2016; Weinberg & Bakker, 2015). The thought in the original analysis was that the HOUSEHOLD and IMPORT conditions would signify the economic situation in each case. However, as the contradicting results in the original analysis indicate a need for adjustments, a condition combining two important aspects into a macro condition is added.

The reasoning behind the merging of low GDP and a lack of oil export into a macro condition (GDO) is that they both load on the same dimension (Berg-Schlosser & Meur, 2009), namely the governments' lack of economic power. The expectation of this macro condition is that low GDP combined with a lack of oil export enables unrest, whereas non-low

GDP (but not necessarily high GDP) and oil export or the lack thereof do not enable unrest as the government have enough economic power to dampen the effect of high international food prices.

Table 17: GDO macro condition merging criteria

	Non-oil export	Oil export
Low GDP	1	0
Non-low GDP	0	0

The threshold for the Oil export condition is set at 800 Mb/d (Thousand barrels per day). The threshold is set at this number as there is a natural gap in the empirical data between those exporting a large amount versus those who export little to nothing. The numbers in the table are for Crude oil including lease condensate exports (Mb/d).

Table 18: Calibration of the condition OIL EXPORT

Case	2007 amount	2010 amount	Truth table value 2007	Truth table value 2010
Algiers	1,085	805	1	1
Amman	0	0	0	0
Ankara	0	0	0	0
Baghdad	1,637	1,890	1	1
Beirut	0	0	0	0
Cairo	97	188	0	0
Damascus	153	163	0	0
Khartoum	374	362	0	0
Rabat	0	0	0	0
Sanaa	224	176	0	0
Tehran	2,492	2,269	1	1
Tripoli	1,442	1,261	1	1
Tunis	78	74	0	0

Source: (EIA, n.d.-a)

In accordance with *Table 18*, the oil export value is incorporated in *Table 19* presenting the macro condition GDO in only one column, as the dichotomized value is the same for both 2007 and 2010. The oil import numbers were also checked to ensure that the amount imported was not so extensive that the revenue from exports would be counterbalanced (EIA, n.d.-b)

The threshold for Low GDP per capita PPP is set at 12,000 current international $ based on case information from several sources. Tunisia is for example defined as poor in an ILO report (ILO, 2021), as well as Lebanon (Le Borgne & Jacobs, 2016). However, Algeria is defined as not poor by The World Bank (The World Bank, 2021f). According to another report from The World Bank, the poverty in Iraq declined only marginally between 2007 and 2012, but it did nevertheless decline (The World Bank, 2017b). The threshold is therefore set between the 2007 numbers for Algeria and Lebanon.

Table 19: Calibration of the macro condition GDO

Case	2007 amount	2010 amount	Oil export	Truth table value 2007	Truth table value 2010
Algiers	12,311.0	13,095.4	1	0	0
Amman	9,171.5	9,460.3	0	1	1
Ankara	14,968.0	17,555.6	0	0	0
Baghdad	10,953.5	12,717.0	1	0	0
Beirut	11,522.6	14,961.7	0	1	0
Cairo	8,219.5	9,522.5	0	1	1
Damascus	N/A	N/A	0	1[20]	1
Khartoum	2,977.0	3,289.4	0	1	1
Rabat	5,516.9	6,332.1	0	1	1
Sanaa	3,758.2	4,162.1	1	1	1
Tehran	16,150.3	17,388.9	1	0	0
Tripoli	27,896.3	29,895.2	1	0	0

[20] Syria numbers on GDP per capita PPP (current international $) were not available, so I checked GDP per capita (current US$) for the most recent year available 2007. The amount registered for Syria in 2007 was 2,032.6, a number low enough to be coded as 1 (Low GDP), even though numbers for GDP per capita PPP were not available (The World Bank, 2021b).

| Tunis | 9,071.6 | 10,155.5 | 0 | 1 | 1 |

Source GDP: (The World Bank, 2021c)

Before computing the truth table, I conducted a test of necessity:

Table 20: Test of necessity, adjusted analysis

Outcome: UNREST		
Conditions tested	**Consistency**	**Coverage**
ANOCRACY+REPRESSION (ANR)	0.764706	0.650000
CORRUPTION (COR)	0.705882	0.600000
HOUSEHOLD (HOH)	0.529412	0.900000
IMPORT (IMP)	0.705882	0.666667
GDPOIL (GDO)	0.647059	0.733333

The test shows that none of the conditions had a score indicating necessity for the outcome to be present (Rubinson et al., 2019). Next, I present the truth table (*Table 21*), showing that the additional condition did not solve any of the contradictions, but rather created more logical remainders (21 rows).

Table 21: Truth table, adjusted analysis

ANR	COR	HOH	IMP	GDO	UNREST	N	Raw consistency	Cases
1	0	0	0	0	1	2	1	Ankara07 [1], Ankara10 [1]
1	1	1	1	0	1	2	1	Algiers07 [1], Algiers10 [1]
0	0	0	0	1	1	1	1	Rabat10 [1]
1	1	1	0	1	1	1	1	Khartoum07 [1]
1	1	1	1	1	1	7	0.857143	Cairo07 [1], Damascus07 [1], Sanaa07 [0], Cairo10 [1], Damascus10 [1], Khartoum10 [1], Sanaa10 [1]

0	0	0	1	1	0	3	0.666667	Amman07 [1], Rabat07 [0], Amman10 [1]
0	1	0	1	0	0	2	0.5	Tripoli07 [0], Tripoli10 [1]
1	1	0	0	1	0	2	0.5	Tunis07 [0], Tunis10 [1]
1	1	0	1	0	0	3	0.33	Baghdad07 [0], Beirut10 [1], Tehran10 [0]
1	1	0	0	0	0	2	0	Tehran07 [0], Baghdad10 [0]
1	1	0	1	1	0	1	0	Beirut07 [0]

Finally, I present the three different solution paths of the adjusted analysis in *Table 22*, *23* and *24*.

Table 22: Complex solution, adjusted analysis

Complex solution term (configuration)	Raw coverage	Unique coverage	Consistency	Cases with membership
ANR*COR*HOH* IMP	0.470588	0.117647	0.888889	Algiers07 [1], Cairo07 [1], Damascus07 [1], Sanaa07 [0], Algiers10 [1], Cairo10 [1], Damascus10 [1], Khartoum10 [1], Sanaa10 [1]
ANR*COR*HOH* GDO	0.411765	0.058824	0.875	Cairo07 [1], Damascus07 [1], Khartoum07 [1], Sanaa07 [0], Cairo10 [1], Damascus10 [1], Khartoum10 [1], Sanaa10 [1]
ANR*~COR*~HOH* ~IMP*~GDO	0.117647	0.117647	1	Ankara07 [1], Ankara10 [1]
~ANR*~COR*~HOH *~IMP*GDO	0.058824	0.058824	1	Rabat10 [1]
Solution coverage	0.705882			

Solution consistency	0.923077			

Table 23: Parsimonious solution, adjusted analysis

Parsimonious solution term (configuration)	Raw coverage	Unique coverage	Consistency	Cases with membership
HOH	0.529412	0.529412	0.9	Algiers07 [1], Cairo07 [1], Damascus07 [1], Khartoum07 [1], Sanaa07 [0], Algiers10 [1], Cairo10 [1], Damascus10 [1], Khartoum10 [1], Sanaa10 [1]
~COR*~IMP	0.176471	0.176471	1	Ankara07 [1], Ankara10 [1], Rabat10 [1]
Solution coverage	0.705882			
Solution consistency	0.923077			

Table 24: Intermediate solution, adjusted analysis

Intermediate solution term (configuration)	Raw coverage	Unique coverage	Consistency	Cases with membership
ANR*~COR*~IMP	0.117647	0.117647	1	Ankara07 [1], Ankara10 [1]
~COR*~IMP*GDO	0.058824	0.058824	1	Rabat10 [1]
ANR*COR*HOH*IMP	0.470588	0.117647	0.888889	Algiers07 [1], Cairo07 [1], Damascus07 [1], Sanaa07 [0], Algiers10 [1], Cairo10 [1], Damascus10 [1], Khartoum10 [1], Sanaa10 [1]
ANR*COR*HOH*GDO	0.411765	0.058824	0.875	Cairo07 [1], Damascus07 [1], Khartoum07 [1], Sanaa07 [0], Cairo10 [1], Damascus10 [1], Khartoum10 [1], Sanaa10 [1]
Solution coverage	0.705882			
Solution consistency	0.923077			

As mentioned earlier, the test could not solve any of the issues in the original model. There are still five paths with low raw consistency value in the truth table, several unsolved

contradictions, and a larger number of logical remainders than in the original analysis consisting of four conditions. Additionally, tied prime implicants had to be resolved. The prime implicants tied were ANR*HOH*-IMP*GDO and ANR*COR*HOH*GDO. The latter one was kept, as the existing literature in the field has suggested that high import dependency would be important to enable the outcome UNREST. The tied prime implicant appears to be leading Khartoum10 to have a membership in two different configurations, both in the complex and intermediate solution.

Further on, excluding the import condition and exchanging it with the GDO macro condition was attempted, as well as different thresholds for unrest for both the original analysis with four conditions, the expanded analysis with five conditions, the adjusted analysis with GDO instead of IMPORT (as they both measure the economic situation of a country) and lastly an analysis attempt including only three conditions (ANR, HOH and IMP), because they have been more directly linked to food prices in the research literature than the COR condition. None of these adjustments improved the model output. An attempt to code the outcome UNREST as 1 (present) only where there was an increase compared to the reference period, and not a similar or higher level as in the original analysis, aggravated the analysis, leading to low consistency solution terms and fewer cases explained in total.

As a possible modification of the adjusted analysis, a reassessment of the oil export threshold perhaps would have made a difference for Khartoum, but the discrepancy between the data for Sudan and for the lowest value for the next country on the list in amount of oil export (Algeria) was too big to be justified. 431, more than twice the amount of Sudan's highest export rate in 2007 (374 Mb/D).

7. Discussion and conclusion: The pathways to food price-related unrest

As an answer to one of the puzzles posed in the introduction, the analyses performed in this thesis do not portray results that indicates a significant change in any of the conditions examined between the year 2007 and 2010, as suggested by Soffiantini (2020). The only condition varying in dichotomized value between 2007 and 2010 for several cases is the IMPORT condition, and for Beirut in the GDO condition. Rather, the discrepancies are more visible between each case than within.

Further on, answering to the research question "What is the combined effect of prior identified conditions enabling food-related unrest in the capitals of the MENA region?", the combined effect, in times of high food prices, consists of an unstable regime, repressing CSOs, but not efficiently enough to deter unrest, a large share of household budget spent on food, and a high perception of executive corruption in the society. Based on the classification of theoretical mechanisms presented by Rudolfsen (2020a), the temporal deprivation on the individual level (HOH condition), the group level deprivation with elite capture and corruption (COR condition), and the state level with a lack of state repression (ANR condition), as well as lack of state intervention (HOH condition, measuring the economic capacity of a regime), all have been found to be present and enabling unrest in this analysis. The intermediate solution term capturing these conditions (ANR*COR*HOH) have a contradicting case, however, the deviant case have been identified and explained, and I thus consider the result to be valid for the remaining eight cases with a membership in this configuration.

Elaborating on this, all three levels, individual, group and state, have been examined in this thesis through the selected conditions, with food import, level of corruption and regime type relevant for the state level. The ability to gather and organize through civil society organizations proxies the group level, and the household condition is suitable to capture both the group and the individual levels of grievances. The analysis' result portraying regime type and CSO repression, corruption and household spending on food being the conditions most likely to enable the occurrence of urban unrest, indicates that both the state level combined with individual and group perceptions are important to explain the concept of «food riots» during prolonged food price spikes in the MENA region.

The condition ANR, regime type combined with repression of civil society organizations, is the single condition with the highest consistency levels. However, it does not have the highest coverage score, which belongs to the HOUSEHOLD condition. These two

conditions respectively represent the state and group level, and the individual level. The first one relates more to the opportunity structure present, while the latter refers to perceived grievances. Both of the conditions being a part of the minimal formula suggests, as Bara (2014) also have found, that both grievances and opportunity matters in mobilization towards food-related unrest events.

Further on, the set relations can be visualized by using the visualization tool in Tosmana (Cronqvist, 2016) to create a Venn diagram (*Figure 1*).

Figure 1: Venn diagram, original analysis
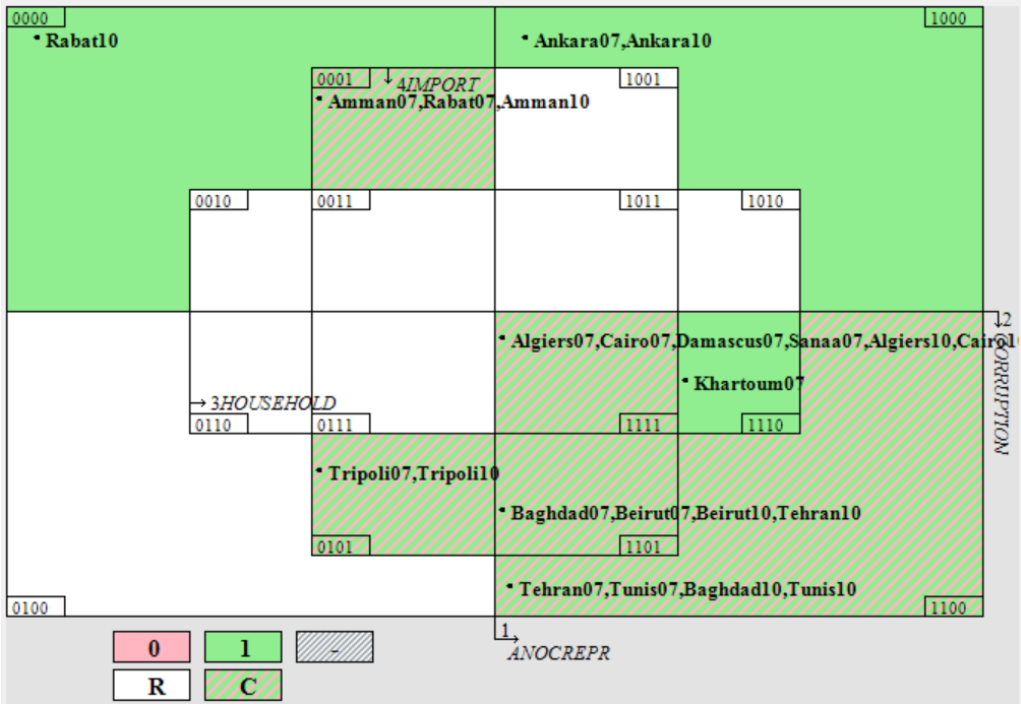
In this diagram, C equals Contradictions, R equals Logical remainders, 0 indicates the absence of the outcome, and 1 indicates the presence of the outcome. All four conditions are included in the order they were analysed. To the lower right we have ANOCREPR (ANR)

The Venn diagram further illustrates that the cities largely have the same coding for each year, and that the largest discrepancies between the cases are between the different cities, and not from year to year within the same cities. The white spaces are logical remainders and the high number of contradictions can be seen in the colouring. As we can see here, Rabat, Baghdad, Tehran and Khartoum are the only four cases changing any values from 2007 to 2010, and not necessarily in the same direction. Rabat10 had a coding of 0 on all conditions, but still the outcome of UNREST. This could be a result of the transfer effect from the unrest

occurring in other countries in the region at the time (van Weezel, 2016). An example of this is the increase in unrest in the months following December 2010, likely due to Mohamed Bouazizi's protest in Tunisia sparking unrest in the following months (Gaub, 2012), potentially resulting in even Saudi Arabia and Kuwait experiencing an unrest event, as recorded by the Urban Social Disorder v2 dataset (Urdal & Hoelscher, 2012). Furthermore, Khartoum07 and Khartoum10 both experienced UNREST, but had a large difference in import levels between the two years, with 2007 food import share being at 5,3% compared to 25,9% in 2010 (see *Table 8*). Since the outcome does not differ from year to year, this illustrates the csQCA finding that regime type, household expenditure and corruption are more important for the outcome than import. However, the single example of Tunis portrays how high international food prices combined with the corruption condition can feed grievances enough to mobilize the people and fuel situations of unrest. Seeing high food prices as a trigger for unrest together with other underlying conditions, rather than the main source of grievance, corresponds with the result of this analysis suggesting that not all countries who experienced high food prices ended up experiencing unrest.

8. Limitations and contributions

According to Schneider and Wagemann (2012), the plausibility of the results from using QCA is dependent on the quality of the preparations before an analysis, such as case selection and calibration of conditions, and the work after the analysis, such as robustness tests and reiterations. With the time and resources available, this thesis has been attempted to be as transparent and thorough as possible. With more time and resources, some improvements could have been made, such as for example applying a double coding process, such as Otte and Maehle (forthcoming) have done. The comparison of two individual calibrations and discussion of them may lead to more robust calibrating decisions, but is however not feasible in a master thesis with a single author. Further on, investigating food prices in relation to other staple insecurities could lead to more insight into what compels people to take to the street, as Koren et al. (2021) identified that the effect of food and water insecurities could have a mutually reinforcing effect on social unrest levels. In addition, it would be useful to look at several large cities, not exclusively capitals, as Sneyd et al. (2013) for example identified protests against high food prices in April 2008 in the Egyptian city of Mahalla. Mahalla had around 450 000 inhabitants in 2007 and 2010 (Population Stat, 2021) and unrest there could therefore be defined as urban unrest. However, this falls outside the scope of my study due to the Urban Social Disorder dataset purely registering unrest events from capitals. The same authors also identified protests in the capital of Mauritania, a country that often is included in the MENA region, but not in the USD dataset. A suggestion for future research would therefore be to expand the number of cities and countries that are examined. To add more details to the findings and controlling for unrest transfers between neighbouring areas, separating between the urban centres and the peri-urban or outskirt areas, where conditions for social unrest are more present (Gizelis et al., 2021), could be useful.

Another limitation of the study, is that I do not identify the degree of increase in unrest, but rather the existence of unrest levelling with or increasing from a reference period a year prior to a certain price limit being reached. In this manner, Soffiantini (2020) might be correct in assessing that the number of unrest events did increase from 2007/2008 levels to 2010/2011 levels, but this do not mean that high food prices in 2007/2008 passed by without contributing to significant unrest episodes. On the other side, Lagi et al. (2011) proposed that the warning effect of the unrest in 2008 led some countries to control food prices better in 2011, dampening the worst effects of the high international food prices. However, they point out that only a few countries had to fail at adequately controlling their food prices for

sparking and spreading unrest events in the region. Accounting for different degrees of unrest could have been done through the use of fsQCA, but was however not feasible due to time constraints for this study, as discussed earlier. Accounting for varying sizes of the cities could also be a source of improvement, as Berazneva and Lee (2013) have suggested that a potential contributing factor to the Egyptian riots of 2007 could be its sizeable urban population, particularly the presence of an urban centre with more than a million inhabitants.

The suggestions presented above for future research endeavours in the field of food related unrest could hopefully contribute to the further development of the understanding of complex interplay between several contextual factors. The contradictions in this analysis could also imply that there are some missing conditions that are not yet identified related to this topic. However, the findings of this thesis do indicate that the interplay between several important conditions adds explanatory power to the already existing theories in the area, and that it can be useful to study phenomena such as 'food riots' not purely quantitatively or qualitatively, but also through a combination of these approaches by the use of QCA.

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Appendices

Appendix 1: Country economic categorization

Table 25: Historical classification by income, GNI per capita in US$

Data for calendar year:	2007	2008	2009	2010	2011
Low income (L)	<= 935	<= 975	<= 995	<= 1,005	<= 1,025
Lower middle income (LM)	936-3,705	976-3,855	996-3,945	1,006-3,975	1,026-4,035
Upper middle income (UM)	3,706-11,455	3,856-11,905	3,946-12,195	3,976-12,275	4,036-12,475
High income (H)	> 11,455	> 11,905	> 12,195	> 12,275	> 12,475
Abu Dhabi	H	H	H	H	H
Algiers	LM	UM	UM	UM	UM
Amman	LM	LM	LM	UM	UM
Ankara	UM	UM	UM	UM	UM
Baghdad	LM	LM	LM	LM	LM
Beirut	UM	UM	UM	UM	UM
Cairo	LM	LM	LM	LM	LM
Damascus	LM	LM	LM	LM	LM
Khartoum	LM	LM	LM	LM	LM
Kuwait City	H	H	H	H	H
Rabat	LM	LM	LM	LM	LM
Riyadh	H	H	H	H	H
Sanaa	L	L	LM	LM	LM
Tehran	LM	LM	UM	UM	UM
Tripoli	UM	UM	UM	UM	UM
Tunis	LM	LM	LM	UM	UM

Source: (The World Bank, 2021d)

Appendix 2: The FAO food price threshold

After e-mail correspondence with Davide Natalini, I obtained the data used by Natalini et al. (2019) to determine the international food price threshold they defined, where after this threshold of 140 being reached, there would be an increase in probability for a random country experiencing a food riot with >1%. As the baseline for the calculations in the FAO FPI changes, the data from Natalini et al. (2019) were compared with the current available data, in the period July 2007 to December 2011, to make sure that the threshold utilized in this study at 100 was equal to the threshold of 140 set by Natalini et al. (2019).

Table 26: Food price threshold

Date	Food Price Index (real, 2002-2004=100)	Above threshold 140 (0=NO 1=YES)	Date	Food Price Index (real, 2014-2016=100)	Above threshold 100 (0=NO 1=YES)
7/2007	138,2	0	7/2007	99,9	0
8/2007	143,2	1	8/2007	103,7	1
9/2007	150,6	1	9/2007	110,1	1
10/2007	153,1	1	10/2007	112,8	1
11/2007	157,6	1	11/2007	115,8	1
12/2007	160,9	1	12/2007	119,9	1
1/2008	157,0	1	1/2008	116,7	1
2/2008	168,4	1	2/2008	124,5	1
3/2008	171,3	1	3/2008	128,5	1
4/2008	169,4	1	4/2008	126,8	1
5/2008	170,0	1	5/2008	126,5	1
6/2008	175,9	1	6/2008	128,9	1
7/2008	173,2	1	7/2008	126,6	1
8/2008	164,0	1	8/2008	117,8	1
9/2008	154,8	1	9/2008	109,7	1
10/2008	136,0	0	10/2008	94,9	0
11/2008	124,7	0	11/2008	87,1	0
12/2008	117,8	0	12/2008	83,6	0
1/2009	123,5	0	1/2009	89,6	0
2/2009	118,8	0	2/2009	87,3	0

3/2009	121,0	0	3/2009	87,1	0
4/2009	124,9	0	4/2009	90,4	0
5/2009	133,4	0	5/2009	96,8	0
6/2009	133,7	0	6/2009	96,8	0
7/2009	131,2	0	7/2009	94,1	0
8/2009	136,3	0	8/2009	96,9	0
9/2009	136,2	0	9/2009	96,5	0
10/2009	139,5	0	10/2009	98,3	0
11/2009	149,2	1	11/2009	102,5	1
12/2009	150,2	1	12/2009	104,4	1
1/2010	146,4	1	1/2010	101,5	1
2/2010	143,7	1	2/2010	99,0	0
3/2010	136,9	0	3/2010	96,3	0
4/2010	137,9	0	4/2010	96,9	0
5/2010	137,8	0	5/2010	96,3	0
6/2010	136,4	0	6/2010	95,8	0
7/2010	141,0	1	7/2010	100,0	1
8/2010	149,0	1	8/2010	107,7	1
9/2010	157,5	1	9/2010	114,2	1
10/2010	166,9	1	10/2010	120,1	1
11/2010	173,1	1	11/2010	124,2	1
12/2010	180,4	1	12/2010	129,3	1
1/2011	171,1	1	1/2011	120,4	1
2/2011	176,6	1	2/2011	124,0	1
3/2011	172,5	1	3/2011	121,0	1
4/2011	175,0	1	4/2011	122,9	1
5/2011	172,6	1	5/2011	121,8	1
6/2011	172,9	1	6/2011	121,6	1
7/2011	171,6	1	7/2011	120,0	1
8/2011	170,9	1	8/2011	119,8	1
9/2011	167,4	1	9/2011	117,5	1
10/2011	160,6	1	10/2011	113,3	1

11/2011	161,0	1	11/2011	113,6	1
12/2011	156,8	1	12/2011	110,0	1

Appendix 3: Full description of V-dem variables

The condition REPRESSION was operationalized according to the V-dem codebook description of the variable *CSO repression (C) (v2csreprss)* answering the question "Does the government attempt to repress civil society organizations (CSOs)?"

Responses:

0: Severely. The government violently and actively pursues all real and even some imagined members of CSOs. They seek not only to deter the activity of such groups but to effectively liquidate them. 1: Substantially. In addition to the kinds of harassment outlined in responses 2 and 3 below, the government also arrests, tries, and imprisons leaders of and participants in oppositional CSOs who have acted lawfully. Other sanctions include disruption of public gatherings and violent sanctions of activists (beatings, threats to families, destruction of valuable property). 3: Weakly. The government uses material sanctions (fines, firings, denial of social services) to deter oppositional CSOs from acting or expressing themselves. They may also use burdensome registration or incorporation procedures to slow the formation of new civil society organizations and sidetrack them from engagement. The government may also organize Government Organized Movements or NGOs (GONGOs) to crowd out independent organizations. 4: No. Civil society organizations are free to organize, associate, strike, express themselves, and to criticize the government without fear of government sanctions or harassment (Coppedge, Gerring, Knutsen, Lindberg, Teorell, Altman, et al., 2021, p. 193).

The threshold of the condition was set at 0-3, as 0-3 indicates the presence of repression, while 4 indicates no repression present.

The condition ANOCRACY was also operationalized according to the V-dem codebook description of the variable *Regimes of the world – the RoW measure (D) (v2x_regime)* answering the question:

How can the political regime overall be classified considering the competitiveness of access to power (polyarchy) as well as liberal principles?

Responses:

0: Closed autocracy: No multiparty elections for the chief executive or the legislature.
1: Electoral autocracy: De-jure multiparty elections for the chief executive and the

legislature, but failing to achieve that elections are free and fair, or de-facto multiparty, or a minimum level of Dahl's institutional prerequisites of polyarchy. 2: Electoral democracy: De-facto free and fair multiparty elections and a minimum level of Dahl's institutional prerequisites for polyarchy, but either access to justice, or transparent law enforcement, or liberal principles of respect for personal liberties, rule of law, and judicial as well as legislative constraints on the executive not satisfied. 3: Liberal democracy: De-facto free and fair multiparty elections and a minimum level of Dahl's institutional prerequisites for polyarchy are guaranteed as well as access to justice, transparent law enforcement and the liberal principles of respect for personal liberties, rule of law, and judicial as well as legislative constraints on the executive satisfied (Coppedge, Gerring, Knutsen, Lindberg, Teorell, Altman, et al., 2021, p. 283).

The condition COR (corruption) was operationalized according to the V-dem codebook description of the variable *Executive corruption index (D) (v2x_execorr)* answering the question:

How routinely do members of the executive, or their agents grant favors in exchange for bribes, kickbacks, or other material inducements, and how often do they steal, embezzle, or misappropriate public funds or other state resources for personal or family use?

Scale: Interval, from low to high (0-1).

Clarification: The point estimates for this index have been reversed such that the directionality is opposite to the input variables. That is, lower scores indicate a normatively better situation (e.g. more democratic) and higher scores a normatively worse situation (e.g. less democratic). Note that this directionality is opposite of that of other V-Dem indices, which generally run from normatively worse to better. (Coppedge, Gerring, Knutsen, Lindberg, Teorell, Altman, et al., 2021, p. 298)

Table 27: Amount of unrest and thresholds, 3 months

Unrest 3 months	Unrest1 Aug07-Oct07	Unrest1lag Sep07-Nov07	Threshold period1	Amount1	Amount1lag	Unrest2 Jul10-Sep10	Unrest2 lag Aug10-Oct10	Threshold period2	Amount2	Amount2lag
Algiers	0	0	0,25	0	0	0	0	0,25	0	0
Amman	1	0	0,25	1	0	0	0	0	0	0
Ankara	1	0	0,5	1	0	0	0	0,25	0	0
Baghdad	0	0	11,25	2	4	0	0	7,5	5	4
Beirut	0	0	3,75	0	0	1	1	0	1	1
Cairo	1	0	0,5	1	0	0	0	0,75	0	0
Damascus	0	0	0,25	0	0	0	0	0	0	0
Khartoum	0	0	0,25	0	0	0	0	0	0	0
Rabat	0	0	0	0	0	0	0	0	0	0
Sanaa	0	1	0,5	0	1	0	1	0,25	0	1
Tehran	1	0	1	7	0	0	0	3	0	0
Tripoli	0	0	0	0	0	0	0	0	0	0
Tunis	0	0	0	0	0	0	0	0	0	0

Table 28: Amount of unrest and thresholds, 6 months

Unrest 6 months	Unrest1 Aug07-Jan08	Unrest1lag Sep07-Feb08	Threshold period1	Amount1	Amount1lag	Unrest2 Jul10-Dec10	Unrest2lag Aug10-Jan11	Threshold period2	Amount2	Amount2lag
Algiers	1	1	0,5	1	1	0	1	0,5	0	2
Amman	0	1	0,5	0	1	0	0	0	0	0
Ankara	1	1	1	1	1	0	0	0,5	0	0
Baghdad	0	0	22,5	9	9	0	0	15	9	8
Beirut	0	0	7,5	5	5	1	1	0	1	1
Cairo	1	1	1	2	2	0	0	1,5	0	1
Damascus	0	1	0,5	0	1	0	0	0	0	0
Khartoum	1	1	0,5	2	2	0	1	0	0	1
Rabat	0	0	0	0	0	0	0	0	0	0
Sanaa	0	0	1	0	0	1	1	0,5	1	2
Tehran	0	1	2	1	2	0	0	6	0	1
Tripoli	0	0	0	0	0	0	0	0	0	0
Tunis	0	0	0	0	0	0	1	0	0	1

Table 29: Amount of unrest and thresholds, 3 months after highest price peak

Unrest 3 months after peak	Unrest1 Mar08-May08	Unrest1lag Apr08-Jun08	Threshold period1	Amount1	Amount1lag	Unrest2 Jul10-Dec10	Unrest2lag Aug10-Jan11	Threshold period2	Amount2	Amount2lag
Algiers	0	0	0,25	0	0	0	1	0,25	0	2
Amman	0	0	0,25	0	0	0	0	0	0	0
Ankara	0	0	0,5	0	0	0	0	0,25	0	0
Baghdad	0	0	11,25	5	6	0	0	7,5	9	7
Beirut	0	0	3,75	2	2	1	1	0	1	1
Cairo	0	0	0,5	0	0	0	1	0,75	0	1
Damascus	0	0	0,25	0	0	0	0	0	0	0
Khartoum	0	0	0,25	0	0	0	1	0	0	1
Rabat	0	0	0	0	0	0	0	0	0	0
Sanaa	1	0	0,5	1	0	1	1	0,25	1	2
Tehran	0	0	1	0	0	0	0	3	0	1
Tripoli	0	0	0	0	0	0	0	0	0	0
Tunis	0	0	0	0	0	0	1	0	0	1

Data source: Urban Social Disorder dataset (Urdal & Hoelscher, 2012)

Appendix 5: Logbook – the traces of an iterative process

According to Meur et al.(2009) the dialogue between the researcher and the case and condition knowledge is essential in QCA. In the following, I will therefore present the parts of the analysis where I made substantive changes in the process of specifying the model. The conditions not mentioned here where more or less operationalized the same way during the whole process of csQCA, or their changes were so important for the analysis that it is described in the main text.

5.1 The unrest period

First, I tried looking at the first three months after the food price threshold set by Natalini et al. (2019) was reached. The assumption was that the immediate months following this threshold would show a significant increase in unrest events. As written earlier, there is broad agreement in the peace and conflict literature that high food prices lead to unrest, and I therefore adjusted the number of months included in the unrest periods until the research model was adequately specified to capture the inhabitants' reactions to the high food prices.

For the cases in this study, the presence of unrest in the months closest to the price threshold was minimal. For the first unrest period, the price threshold was reached in August 2007, but an increase in overall unrest throughout the cases was not visible until December 2007. Equally, for the second unrest period, where the price threshold was surpassed in June 2010, a visible increase in unrest events did not occur until January 2011. A third period with prices above the threshold is November 2009 to January 2010, where unrest in several cases increases in January and February 2010. These findings indicate that there is either a delay in the transfer effect from international food prices to local prices, or an exhaustion in the population where prolonged periods of high food prices lead to more widespread reactions after between two to six months for these particular periods and cases. This reasoning is at the base of my decision to look at a whole year of unrest after the price threshold is surpassed, and not only the first subsequent months. The data on unrest events in each city is presented in the tables below, before a further explanation of the iterative process towards a defined unrest period follows.

Table 30: Amount of unrest, August 2006 to December 2011

	Aug.06	Sep.06	Oct.06	Nov.06	Dec.06	Jan.07	Feb.07	Mar.07	Apr.07	May.07	Jun.07	Jul.07	Aug.07	Sep.07	Oct.07	Nov.07	Dec.07	Jan.08	Feb.08	Mar.08	Apr.08	May.08
Algiers	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
Amman	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Ankara	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	1	0	0	0
Baghdad	2	1	3	7	2	4	7	5	2	3	5	4	1	1	1	1	1	4	1	2	3	2
Beirut	1	1	0	2	3	2	1	0	1	3	1	0	0	1	0	0	1	3	0	0	0	2
Cairo	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0
Damascus	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Khartoum	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
Rabat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sanaa	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
Tehran	0	0	2	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0
Tripoli	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tunis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sum	3	5	6	9	6	6	8	7	5	8	7	4	2	2	2	2	3	10	5	3	3	4

	Jun.08	Jul.08	Aug.08	Sep.08	Oct.08	Nov.08	Dec.08	Jan.09	Feb.09	Mar.09	Apr.09	May.0	Jun.09	Jul.09	Aug.09	Sep.09	Oct.09	Nov.09	Dec.09	Jan.10	Feb.10	Mar.10
Algiers	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Amman	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
Ankara	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
Baghdad	1	1	1	3	2	4	1	2	3	4	5	2	2	3	3	1	1	0	0	2	2	1
Beirut	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cairo	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	1	0	0	1	1
Damascus	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Khartoum	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
Rabat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sanaa	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Tehran	0	0	0	0	0	0	0	0	0	0	0	0	8	2	2	0	0	2	2	3	1	0
Tripoli	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tunis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sum	1	2	1	6	3	5	1	3	4	4	5	4	11	5	5	1	1	4	2	6	7	3

	Apr.10	May.10	Jun.10	Jul.10	Aug.10	Sep.10	Oct.10	Nov.10	Dec.10	Jan.11	Feb.11	Mar.11	Apr.11	May.11	Jun.11	Jul.11	Aug.11	Sep.11	Oct.11	Nov.11	Dec.11
Algiers	0	0	0	0	0	0	0	0	0	2	1	2	0	2	0	0	0	0	0	0	0
Amman	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0
Ankara	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	1	0	0	0
Baghdad	3	2	2	2	2	1	1	2	1	0	2	3	2	1	1	1	0	0	2	3	1
Beirut	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
Cairo	0	1	0	0	0	0	0	0	0	1	0	3	1	1	1	3	2	3	1	1	2
Damascus	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	2	1	2	1	3	1
Khartoum	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0	0	0	0	0	0
Rabat	0	0	0	0	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	0	0
Sanaa	1	0	0	0	0	0	1	0	0	1	4	3	1	2	3	2	0	2	1	1	1
Tehran	0	1	1	0	0	0	0	0	0	1	4	1	1	0	2	1	0	0	0	1	0
Tripoli	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	1	0	0	1	0
Tunis	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	1	0	0	0	0	0
Sum	4	4	3	2	3	1	2	2	1	7	14	21	10	13	11	10	5	8	6	10	5

[21] Data source: Urban Social Disorder dataset (Urdal & Hoelscher, 2012)

In order to define the unrest period beyond looking at the first subsequent three months after surpassing the price threshold, I firstly included a lag of one month after the price threshold was reached, to allow the manifestation of the prices on a local level in each case. This step had only a marginal improving effect on the model, and I therefore conducted several further steps to improve the analysis. I looked at both unrest levels the first six months after the food price threshold and at the three months following the highest peak during each elevated food price period. The results were still unsatisfying, and I therefore decided looking at 12 months after the food price threshold, in accordance with other sources claiming that a

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[21] Numbers of events that seemed abnormally high, such as eight unrest events in Tehran in June 2009 were double checked with case information. In the case of Tehran, the high number of unrest events were connected to a national election. The calculation of unrest thresholds from the reference periods was informed by the cross checking of all months included in the tables above with national election months. The dichotomization of UNREST or NO UNREST was not affected by election-related unrest.

prolonged period of high food prices are those driving the unrest (Smith, 2014) (+ other sources). This seemed like a better fit for my research purpose, and the need for a one-month lag disappeared with this period length. Finally, I tried expanding the unrest period with an additional two months, to cover the whole period with prices above the food price threshold in 2007. I kept the period for 2010 at 14 months also, even though the high food price period from 2010 extended years into the future, in order to have the two periods comparable. This step weakened my analysis model and gave less consistent results, and I therefore decided to keep the 12 months period in my final analysis.

5.2 Large share of household income spent on food

Various sources were used trying to inform the condition "share of household income spent on food", such as FAO Statistics Household Survey Database, International Monetary Fund (IMF), the World Bank, International Labour Organization (ILO), World Food Programme (WFP), USDA Economic Research Service, country publications and Sternberg (2012). In addition, I contacted both Nomura and OECD to access better numbers. Nomura only shares their full datasets with institutional investors, and OECD sadly did not have any helpful data. Rob Subbaraman, research analyst at Nomura, suggested through e-mail correspondence that I check the sources they used to calculate household spending on food in one of their most recent reports. These sources were mostly 2019 data from the OECD-FAO Agricultural Outlook, combined with 2018 data from the EIU's 2018 Global Food Security index or countries' respective household budget surveys where the Agricultural Outlook report had missing numbers (Subbaraman et al., 2019, p. 13). Looking at these sources, it becomes apparent that the data foundation for more recent years are more available, however I was unable to find useful data for 2007 and 2010. Finally, I ended up using data from the International Comparison Program for Food and non-alcoholic beverages, share of: Individual consumption expenditure by households, 2005 and 2011. This was the most coherent and consistent numbers I could find on this topic, and I therefore had to choose a suboptimal solution with numbers from other years than 2007 and 2010. For the countries lacking numbers in the ICP, I used numbers from either national banking or international organizations reports for the years available closest to 2007 and 2010.

5.3 Large food import share

I have tried using several sources for data on the food import share condition. Firstly, I used FAO as a data source, but later exchanged it with numbers from the World Development Indicators. The reason for this choice is that the numbers from FAO were computed using a three year mean, which I later found to be an inaccurate measure. I discovered this when trying to find data on the food import of Khartoum, because it was missing for 2007 and 2010 in the FAO dataset. Finding numbers for Khartoum in the WDI instead, I discovered that there were large fluctuations from year to year in the food import numbers for each case. I also tried adjusting the threshold for this condition by placing it on the basis of case information on countries that had experienced unrest, instead of countries that did not experience unrest. This did not lead to any changes in the dichotomization process.

5.4 Source of oil export data

The source for defining countries with or without oil export was originally Sdralevich et al. (2014). The oil export status for Turkey was not included in Sdralevich et al., but was coded with no oil export due to their status as "one of the most energy import dependent countries in the world, suffering deeply from the economic and strategic burdens of oil importation" (Ediger & Berk, 2011, p. 2132).

However, Yemen being presented as an oil exporting country in Sdralevich et al. (2014) did not add up when searching for case information. Yemen is importing more than it is exporting of refined petroleum products and the amount of crude oil exported is so small that it does not alleviate the economic situation in the country, therefore Sanaa was coded as 1, despite their oil export (CIA, 2021). This led me to investigate other sources for oil export data. The data from CIA World Factbook unfortunately only contained the most recent numbers available, and no time series. Therefore, I chose to use data from US Energy Information Administration for Petroleum and other liquids instead (EIA, n.d.-a). I also considered data from The World Bank, but the only data on petroleum-related topics available there was Oil rents (% of GDP) (The World Bank, 2021e), which do not empirically describe the argument the condition is built upon.

5.5 Cases and conditions included earlier in the process, but later excluded

The cities Casablanca and Istanbul were removed from the sampling, because of the risk they posed to the analysis due to data on country level only, leading two cities from Morocco and Turkey, respectively Casablanca and Rabat, and Istanbul and Ankara, to have the same calibration on each condition, but differing outcomes. Casablanca and Istanbul were originally included in this thesis because they are previous capital cities, and therefore included in the MENA region by the Urban Social Disorder dataset v.2 (Bahgat et al., 2017).

The state lacking economic capacity to finance itself was first thought of as a useful condition to determine the degree of self-sustainment each country possessed. Later on, it became clear that both the conditions of share of household budget spent on food and size of food import share already captured the economic aspects of this analysis. However, it was once again tried incorporated through the macro condition GDO, without contributing to further improvements of the model.

The condition a "high degree of subsidized food prices" were one of the conditions that seemed of high importance to the analysis (Natalini et al., 2019), but were surprisingly difficult to attain adequate data to cover. Several countries in the Middle East and North Africa region have used bread, grain or consumer subsidies for decades, as part of an «autocratic bargain» to keep citizen dissatisfaction levels low. The risk with such measures is that they can become entrenched and lead to ever increasing fiscal costs when international prices increase (Albers & Peeters, 2011; Soffiantini, 2020). Albers & Peeters (2011), Sdralevich et al. (2014), various IMF-, WFP- and FAO-led country surveys, and finally the World Development Indicators are some of the sources I explored without luck in finding data covering enough of the cases. Therefore, I had no choice but to leave out the condition. Additionally, the effect of this condition is also captured in the household expenditure condition, as the continued high share of a household budget being spent on food indicates that the attempts of the government to keep food prices in check through subsidies have not functioned. The impression in general when searching for food price and unrest related data is that the collection of data became much more thorough and systematic after 2010/2011, and I therefore assume that studies investigating the same topics but on more recent years than 2007 and 2010 might have good chances to make some interesting discoveries.

A high degree of unemployment was also included as a condition in the beginning, as it is a challenge especially persistent in the MENA region (Al-Shammari & Willoughby, 2019;

ILO, 2007). For example, Soffiantini (2020) lists high unemployment rates as one of the underlying conditions sparking unrest when the food prices rose. Maystadt et al. (2014) also underline the importance of reducing youth unemployment. In the end, I decided to see household spending and unemployment as two sides of the same coin, as they both affect the purchasing power of the people. The unemployment condition was thus later left out because it seemed likely that the effect of this condition, namely the economic power the inhabitants have for buying food, was captured more precisely by the household expenditure condition.

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Broad grievances and food-related unrest in the MENA region

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