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**UNDERSTANDING THE LINK BETWEEN FREEDOM
AND ECONOMIC GROWTH ON UNREST**

by

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December 2021

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**UNDERSTANDING THE LINK BETWEEN FREEDOM AND ECONOMIC
GROWTH ON UNREST**

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Submitted in partial fulfillment of the
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ABSTRACT

Civil and military planners must account for innumerable variables affecting stability in a region. While extensive research has been conducted on causes of violence, much remains unknown about the factors that affect the levels of unrest experienced in different societies. To help to address this gap, this thesis explores the link between economic growth and political freedom and their reinforcing effects on the suppression of violent unrest, while tailoring the empirical approach for use by civil and military planners. Based on a cross-national statistical analysis of levels of unrest, the evidence shows that countries with low levels of freedom but high levels of economic growth are able to partially offset the conflict promoting effects of their restrictions, when compared to countries with higher levels of freedom. The evidence also shows that economic inequality and electoral authoritarianism can increase the pacifying effects of government efforts to suppress unrest, highlighting the sometimes contradictory effects of rising economic prospects alongside reductions in civil freedoms and heightened concentrations of economic and political power. Planners may use these findings and this framework to examine potential drivers of unrest in their area of responsibility. This thesis also provides a baseline framework for empirical analysis of conflict drivers, which can provide a basis for planners to build upon with expanded data sources as they become available.

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LIST OF ACRONYMS AND ABBREVIATIONS

CCP	Chinese Communist Party
GDP	gross domestic product
NSS	National Security Strategy
OECD	Organization for Economic Co-operation and Development
SCAD	Social Conflict Analysis Database
UCDP	Uppsala Conflict Data Program
USG	United States Government
WDI	World Development Indicators

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I. INTRODUCTION

A. BACKGROUND

I initially noticed the phenomenon that would become the basis for this thesis during a trip through China and Hong Kong in 2015. This trip took me through mainland China, and the Honk Kong SAR and was the first of many trips to both territories. Hong Kong and the mainland share many similarities, from their population to language and a common ancestral history. The difference that I noticed came out through numerous social interactions. Hong Kong has been a very developed urban center that for more than 150 years and for much of that time has been afforded all the freedoms under English common law. It has also achieved a very high level of economic development, with much of the meteoric growth as one of the Asian tiger economies of the 1990s having subsided to a more modest pace of growth reminiscent of most developed Western nations. Conversely, mainland China has followed a very different development path, both economically and in terms of government control. For much of the 20th century the mainland struggled through wars, devastation, and political upheaval, only emerging closer to the turn of the century as a fast-growing economic powerhouse.

Since the 1997 handover of Hong Kong from British colonial rule to the CCP, the new regime has exerted more and more control over people's freedoms (i.e.: press, travel, governance), which has led to negative reactions from the native population. This loss of freedom combined with the slow economic growth in the territory has coincided with an increase in social unrest and an increase in rebellious sentiment against the ruling power. Many of the younger population, mostly born and educated in Hong Kong, were upset at the slow loss of their freedoms, and these same people have often seen their quality of life decrease from slow economic growth (or economic growth that was not evenly divided across the social strata), economic migration from the mainland, the inability of the cities' welfare services to maintain their quality of life, and the spiraling cost of living. The implications of the decrease in freedom combined with the economic stagnation have been very clear in the last few years, with protests and pro-democracy demonstrations becoming more regular and violent during the end of the last decade.

Contrary to the situation that I witnessed in Hong Kong, in the mainland, a less prosperous territory, but with a much more quickly growing economy, the people seemed to tolerate a much lower level of personal freedom than is currently extant in Hong Kong. While most of the people I encountered seemed to be acutely aware that the government was taking away, controlling, or curtailing much of their freedoms, they tolerated it. The most rational and common explanation that I received is that this is because people's tolerance for repression is tied to economic growth perceived or otherwise. Most of the people would cite their increasing quality of life as the reason they accepted the strict curtailing of their freedoms by the government. My conclusion was that if the mainland was maintaining a high level of economic growth along all the social strata, the population remained content and pacified. The juxtaposition of the two viewpoints led to this research question.

Major Research Focus:

The main goal of this thesis is to evaluate the relationship between economic growth and political freedom or repression, in a given country, and how these are tied to expected levels of civil unrest or events of revolt. Put in the context of the earlier observations: was the low level of unrest and revolt in mainland China despite the relatively low freedoms enjoyed by the population due to the country's persistently high economic growth? Important to this question was not just to prove a single observation correct but to explore the interaction of these variables for a more generalizable link, not exclusive to China. Two further questions were pertinent enough to be included in this analysis. Firstly, are these levels different for different forms of government? It is important, if establishing a connection between these variables to understand their interactions under various governments. Finally, the question that is important from an operational perspective: Is it possible to predict unrest or revolt based on knowledge of these levels and the type of government?

B. RESEARCH SIGNIFICANCE

This research was initiated primarily from the standpoint of military operational and strategic planning. Extensive emphasis has been placed by the military on

understanding and incorporating the civil component of military operations both in peacetime and in war. This significance is plainly on display in the 2021 interim National Security Strategy where the word “economic” is used 34 times in 24 pages.¹ Specifically, the interim guide addresses this question in the first eight paragraphs: “When we invest in the economic development of countries, we create new markets for our products and reduce the likelihood of instability, violence, and mass migrations.” Clearly even at the highest levels of governance the relationship between economic growth and unrest is clear but also perhaps not fully understood. Even less clear is how economic growth interacts with other major factors addressed in this thesis such as levels of freedom, government type and instability.

While the NSS makes the importance of economic growth to the nation’s security clear, there are many more applications of this research outside of the United States. From a strategic perspective, understanding the impact of economic growth on a foreign population is invaluable, specifically when looking at the causes of, or resistance to, unrest. U.S. planners currently use frameworks which include economics, freedom, and government type in their assessments.² However, it is difficult to take the information from the assessments in order to generate a reliable predictive analysis. If there is a more systematic link that can be established, this can provide planners with a better framework for generating estimates about the impact of their policies and operations. The ability to estimate the degree of risk of unrest or rebellion stemming from these metrics would greatly assist with strategic and operational planning.

In addition to the military there are numerous other United States Government agencies that can use such metrics in their assessments in looking at both domestic and foreign data. Once again, a framework for analyzing and interpreting those metrics could be highly beneficial. For example, an agency tracking the wellbeing of a foreign population

¹ “Interim National Security Strategic Guidance” (The White House, March 2021), <https://www.whitehouse.gov/wp-content/uploads/2021/03/NSC-1v2.pdf>.

² Joint Chiefs of Staff, “JP 3-0 Joint Operations,” January 17, 2017, https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp3_0ch1.pdf?ver=2018-11-27-160457-910.

could use the estimated economic growth, expected trend of freedom, and government type and through the lens of this thesis estimate the likely impact on unrest.

Interestingly, despite the inspiration for this thesis coming from events several years beforehand this question dives deep into some of the key concerns for individuals and governments during the COVID-19 pandemic. Key to these events have been the economic downturns associated with governments' measures to curb the spread of the virus. With the rise in restrictions placed on people's freedom by their governments, understanding these dynamics may become even more relevant. With this information and trends that can be identified using this thesis as a framework there may be some insight gained into current unrest and perhaps some estimations of the implications of future restrictions or economic changes.

The findings presented below generally support the main hypotheses. I find that there is a clear negative association between growth and conflict, with higher levels of GDP growth producing lower levels of violent unrest. Importantly, it seems that this effect holds, even after we have accounted for the effects of political factors such as political freedom and regime type. Interestingly, I also find that this is not a simple linear effect, as there was a decided decrease in the effect of GDP growth past a certain point, leading to the conclusion that above or below a certain level of GDP growth, its effect on unrest becomes more limited. While this shift in the impact of GDP growth was not explicitly predicted by my hypotheses, it is plausible that at extremely high or low values of GDP growth, we would see diminishing marginal effects as other variables may become more relevant in such extreme circumstances. This implies that such models will need to consider the role of non-linear effects.

I also find that high levels of freedom are associated with lower levels of unrest. However, contrary to expectations, I find that authoritarian governments are also associated with lower levels of unrest. This seems to imply that the effects of civil and social freedoms are very different than the effects of electoral democracy. Finally, the findings also provide evidence that that economic inequality may have an unexpected impact in suppressing the level of unrest and may be even more impactful on that level than GDP growth, implying

that much of the conventional wisdom concerning the drivers of unrest may be based in an incomplete understanding of the effects of concentrated economic and political power.

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II. LITERATURE REVIEW

Extant sources that have explored the relationship between economic growth, freedom indices, levels of repression, civil unrest, revolt, and government type, yield a vast array of research in all forms. With this thesis residing at the intersection of several important disciplines including economics, political science, and sociology a plethora of sources is to be expected. Since this enormous cross section of disciplines is covered by the thesis question, the research surrounding this seems to approach the problem from numerous viewpoints, often making the analysis difficult to use in directly answering the thesis question, but allowing the data that was used in the analysis to support research into my thesis question. For example, research into food insecurity and rebellion might not be directly related to the question at hand, but data used such as GDP growth, population, and measurements of unrest or rebellion can be extrapolated to help in framing the analysis presented below. A fusion of the research focused on empowering the strategic planner and providing them a tool or lens for analysis of policy and plans is a worthwhile effort to address this problem.

A. ECONOMIC GROWTH AND CIVIL WAR

Arguably the closest literature to this thesis question that is readily accessible and highly regarded is that relating to economic growth and civil war.³ Although this research focuses specifically on civil wars it correlates well with this research, as events such as civil war correlate with the measurements of unrest that were used as data points in this thesis. Therefore, in measuring the effects of economic growth on civil war they are measuring similar effects as in this question, though in a smaller and more specific outcome sample. An interesting note to this is that in the article “A Review of Recent Advances and Future Directions in the Quantitative Literature on Civil War” the author argues that the

³ Ibrahim A Elbadawi, “Civil Wars and Poverty: The Role of External Interventions, Political Rights and Economic Growth,” n.d, 40; Paul Collier and Anke Hoeffler, “On Economic Causes of Civil War,” *Oxford Economic Papers* 50, no. 4 (October 1, 1998): 563–73, <https://doi.org/10.1093/oeq/50.4.563>; James D. Fearon and David D. Laitin, “Ethnicity, Insurgency, and Civil War,” *American Political Science Review* 97, no. 01 (February 2003): 75–90, <https://doi.org/10.1017/S0003055403000534>.

definition of a civil war is too vague and that better measurements such as deaths per year due to this violence including episodes that are of sufficient magnitude should be used to determine what constitutes these variables.⁴ While these measurements may be better suited to examining a civil war, the specificity of magnitudes of death do not make it a valuable metric when the question is expanded to general unrest from civil war as events of unrest may not include large death tolls but may still be significant in the research.

The most common of the datasets for unrest data used in these studies is the Uppsala Conflict Data Program (UCDP) armed conflict database.⁵ The difference between the use of this data set in these papers tends to be the threshold of conflict that they measure. This is generally done by differentiating between the scale of the number of deaths, for example being less than or greater than 1,000 deaths in a particular conflict.⁶ The database also allows for the differentiation of the parties involved in the conflict. This allows the analysis to determine to use or discard events where there may have been internal or external state actors or other instances where the violence may be between intrastate actors.

Another key point in looking at economic growth and civil war is the much smaller sample sizes that can be analyzed. As stated above, depending on how you define civil war you may have very few data points to analyze. The case is also that often this research is done with a slightly different group of variables. For example, one excellent resource looked at growth along with international commodity prices during the analysis of civil war.⁷ These niche analyses can provide a planner with a tool to work with but for most United States Government (USG) planners and strategists these may not be the best, most relevant, or most accessible metrics for them to use in order to analyze a given situation.

⁴ Nicholas Sambanis, "A Review of Recent Advances and Future Directions in the Quantitative Literature on Civil War," *Defence and Peace Economics* 13, no. 3 (January 2002): 215–43, <https://doi.org/10.1080/10242690210976>, 24.

⁵ "Uppsala Conflict Data Program Department of Peace and Conflict Research," database, accessed March 23, 2021, <https://ucdp.uu.se/exploratory>.

⁶ Sambanis, "A Review of Recent Advances and Future Directions in the Quantitative Literature on Civil War," 26.

⁷ Markus Brückner and Antonio Ciccone, "International Commodity Prices, Growth and the Outbreak of Civil War in Sub-Saharan Africa," *The Economic Journal* 120, no. 544 (May 1, 2010): 519–34, <https://doi.org/10.1111/j.1468-0297.2010.02353.x>, 1.

An example of this irrelevancy to planners of some of this work would be the finding that a drop in export price increases the chance of civil war in that country.⁸ The challenge when using this information is that their study was done in sub-Saharan African countries where local exports are an enormous part of their overall GDP. It may be questionable using the analysis from these niche scenarios when analyzing other countries in different geographic locations, with different economic makeups, or at a different level of development. Interestingly much of this work does conclude that economic growth and civil war are at least correlated.⁹¹⁰ In their analysis, Brückner and Ciccone found “that a 1 percent drop in GDP increases the risk of civil war onset by over 2 percentage points.”¹¹ If that analysis is correct then it should support the hypothesis presented here, that decreasing economic growth increases unrest, as the measurement of unrest used in this thesis is related to civil war, but broadens the definition to include smaller-scale conflict events.

B. ECONOMIC GROWTH AND FREEDOM

An article by MacCulloch and Pezzini illustrates how this question often appears in writing, and that the analysis is tailored for use in academia and not for planning or strategy. Immediately the article’s abstract directly addresses the thesis question “Greater growth in the gross domestic product can buy off part of the increase in support when freedoms are constrained.”¹² The data cited in the article comes from 1981–1997 and is taken from a broad cross section of populations and countries. I believe this to be an important limitation of the assessment as the older data does not account for changes in the modern landscape, most notably connectedness and the rapid change in technology. Overall, the information in the article is still extremely helpful as it does attempt to

⁸ Brückner and Ciccone, 3.

⁹ Fearon and Laitin, “Ethnicity, Insurgency, and Civil War,” 88.

¹⁰ Collier and Hoeffler, “On Economic Causes of Civil War,” 571.

¹¹ Brückner and Ciccone, “International Commodity Prices, Growth and the Outbreak of Civil War in Sub-Saharan Africa,” 10.

¹² Robert MacCulloch and Silvia Pezzini, “The Roles of Freedom, Growth, and Religion in the Taste for Revolution,” *The Journal of Law and Economics* 53, no. 2 (May 2010): 329–58, <https://doi.org/10.1086/605093>.

investigate, although from a seemingly different lens than the current analysis, the interconnection between economic growth and rebellion. I believe to improve upon this more economic data is needed. One challenge with this article and its usefulness to strategic planners is the use of surveys of “revolutionary tastes” used as the dependent variable. It is unlikely that planners may have the resources or the ability to conduct the necessary surveys to conduct the analysis. This challenge of easily obtainable data is one reason for use of readily available open-source data to measure the dependent variable in the models analyzed here. This paper however is in agreement with the findings presented below, that the loss of freedom corresponds to an increase in the taste for revolt, a similar metric to unrest. They also found that an increase in GDP growth can reduce support for revolt.¹³

One of the greatest challenges with this line of research is how to measure the amount of freedom or lack of it. There are numerous possible metrics to use, such as freedom of press, economic freedoms, social freedoms, as well as multiple different indices developed by different groups.¹⁴ The issue with the indices is that you are at the whim of those groups’ methodologies which often includes a significant amount of qualitative analysis in order to come up with a numerical representation of freedom.¹⁵ Another issue with these indices is that they may or may not cover the time period/s or the geographic location or boundaries that one is trying to study.

Parvin’s paper on economic determinants of political unrest is also closely related to the analysis presented here. They came to several conclusions that support the hypotheses tested below, including that per capita income has an inverse relationship to political unrest and that inequality in income distribution is associated with a change in the

¹³ MacCulloch and Pezzini.

¹⁴ John Högström, “Does the Choice of Democracy Measure Matter? Comparisons between the Two Leading Democracy Indices, Freedom House and Polity IV,” *Government and Opposition* 48, no. 2 (April 2013): 201–21, <https://doi.org/10.1017/gov.2012.10>; Ian Vasquez and Fred McMahon, *The Human Freedom Index 2020*, 2020, <http://www.deslibris.ca/ID/10105748>; “2021 Index of Economic Freedom” (The Heritage Foundation, 2021), <https://www.heritage.org/index/download>.

¹⁵ Manoucher Parvin, “Economic Determinants of Political Unrest: An Econometric Approach,” *Journal of Conflict Resolution* 17, no. 2 (June 1973): 271–96, <https://doi.org/10.1177/002200277301700205>, 273.

level of violence.¹⁶ One challenge for planners would be to use their highly technical methodology in any sort of practical time and resource bound application with limited data.

This research does offer several excellent examples of methodology to use as well as many informed assumptions that can be confirmed and carried over for future research. Much of the qualitative analysis of this literature also forms a good base of understanding for the problem set. This framework was useful in developing the analysis methods used in this thesis. Narrowing down the focus, changing data sources, and adopting variables more relevant to this research question provided valuable insights for refining my models.

C. ECONOMIC GROWTH, GOVERNMENT TYPE, AND UNREST

The next example of research that typifies what is found on the subject is an article by Przeworski and Limongi. While at first glance the article does not seem to track closely with the research question that is being asked, there is some important information that can be gained from both its sources and analysis. The primary question of the article is “Does democracy in the political realm foster or hinder economic growth?”¹⁷ As the article progresses however it delves into how both democracies and other types of government are able to stimulate and control growth and how this stimulation and growth affects rights. It is possible then to juxtapose these assessments with what we know about unrest and rebellion in countries given their regime type and growth and make some informed qualitative assessments of the likely interaction between the variables. Simply put, these papers draw the general conclusion that economic growth is inversely tied to unrest and that government type can make this a weaker or stronger tie.¹⁸ The usefulness of this work to planners is limited by its qualitative nature, which an untrained planner may not be able to replicate when applying their methods to a particular problem set.

¹⁶ Parvin, 284.

¹⁷ Adam Przeworski and Fernando Limongi, “Political Regimes and Economic Growth,” *Journal of Economic Perspectives* 7, no. 3 (August 1, 1993): 51–69, <https://doi.org/10.1257/jep.7.3.51>.

¹⁸ Yi Feng, *Democracy, Governance, and Economic Performance: Theory and Evidence* (Cambridge, Mass: MIT Press, 2003); Francisco L Rivera-Batiz, “Democracy, Governance, and Economic Growth: Theory and Evidence,” *Review of Development Economics* 6, no. 2 (June 2002): 44; Cullen S Hendrix and Stephan Haggard, “Global Food Prices, Regime Type, and Urban Unrest in the Developing World,” *Journal of Peace Research* 52, no. 2 (March 2015): 143–57, <https://doi.org/10.1177/0022343314561599>; Przeworski and Limongi, “Political Regimes and Economic Growth.”

Since this question is not a new development there is a plethora of resources available that address it.¹⁹ The primary focus of the most relevant of the sources is “the interaction of political and economic systems.”²⁰ Utilizing Feng’s book, it is possible to extend the methods that the author used to analyze the interconnection between economic and political systems and apply some of those same methods to the analysis of social and political conflict. One of the weaknesses of the assumptions that seem to be made in this source is that the author seems to equate political systems with levels of freedom. While this may be accurate to a level, I believe that, especially in a modern context, a simple analysis of the type of government of a particular country may not give an accurate representation of the level of freedom, due to manipulation or purposeful misreporting, and therefore cannot be used in the most accurate assessment of the interaction that is being investigated in the models presented below. Unfortunately, because of the challenges in addressing the nuances of government type, a problem also encountered in this thesis, a qualitative approach may be necessary to take in conjunction with the quantitative assessment. Overall, sources such as these can provide a good background and some important methods for developing the analytical approach to the data.

There are also other academic resources including student theses that have explored the interaction between economic growth, politics, and unrest. The most relevant of these documents is a thesis from the University of Bergen.²¹ . As opposed to this thesis, which specifically examines the impact of economic growth and freedom as the focus of its analysis, this paper more closely examines socio-economic inequality. Due to the highly nuanced measures of socio-economic inequality used, the use of this approach for a civil or military planners may be more difficult. This does however provide important concepts for my analysis. Firstly, in understanding the interaction between economic growth and

¹⁹ Alberto Alesina et al, “Political Instability and Economic Growth,” *Journal of Economic Growth* 1, no. 2 (June 1, 1996): 189–211, <https://doi.org/10.1007/BF00138862>; Rivera-Batiz, “Democracy, Governance, and Economic Growth: Theory and Evidence”; Feng, *Democracy, Governance, and Economic Performance*.

²⁰ Feng, *Democracy, Governance, and Economic Performance*.

²¹ Gunhild Gram Giskemo, “Exploring the Relationship between Socio-Economic Inequality, Political Instability and Economic Growth: Why Do We Know so Little?” (The University of Bergen, May 2008), <https://hdl.handle.net/1956/5381>.

repression or freedoms it is necessary to outline how the economic growth is taking place. For example, a high level of economic growth might correlate with low levels of unrest, but this can be nullified or even perhaps inverted if the preponderance of that economic growth is captured by a small subset of the population. One of the strengths of this document is the detailed summary of methodology and measurement. In the paper, along with their quantitative findings they provide a robust assessment of the data that they used and fully explain the equations that they used to analyze the data. Furthermore, the way that the data sets are presented in the article are clear and provide a good resource for setting up how to display the relevant mathematical analysis.

D. INEQUALITY AND UNREST

Some of the best work related to this topic focuses on the interactions between inequality and unrest. Why is inequality and unrest such a popular topic while other economic factors and unrest are less well researched? There may be several reasons for this. The first of these being that in most modern western countries many of the other economic factors, such as exports of natural resources, are often seen as a smaller factor when looking at levels of unrest. The second reason that I would propose that inequality and unrest are well studied is that it crosses the boundary of sociology and economics. While other issues such as economic growth and unrest would also seem to cross this boundary, they fall more squarely into the study of economics and seem to garner less attention. The final reason that inequality may be more highly studied is simply the contentiousness of the issue. This controversy is not a new phenomenon, with one paper from the OECD citing Plato's republic as an early example of the importance placed on inequality and unrest by scholars.²² The relationship between inequality and unrest seems to be one of the most quickly growing areas of study when looking at the intersection of economics and sociology. In the last decade the world's top one percent have gathered

²² Keeley, Brian (2015), "How does income inequality affect our lives?", in *Income Inequality: The Gap between Rich and Poor*, OECD Publishing, Paris, 64.

more than half of the world's private net wealth.²³ This fixation with inequality is driving research into the social effects of economic problems, but it may overlook some of the other important factors which contribute to unrest. Specifically, there seems to be little overlap in the study of the impact of the amount of personal freedom people enjoy combined with the economic impacts on unrest. That is something that this thesis attempts to address in the models presented below.

Interestingly there is a large overlap between much of the research on inequality and unrest and research on how unrest can be caused by politics or levels of freedom. Some of the research that deals specifically with freedom and polity directly or indirectly considers levels of inequality.²⁴ It would be interesting to find out how much weight, either in their qualitative assumptions or conclusions that these authors would place on inequality given the amount of information available on the subject today. Some relevant correlations that have been established in this work are between inequality and social unrest and inequality and volatility, two measurements that track closely with overall unrest or rebellion.²⁵ These correlations are found to be positive for both inequality and social unrest and inequality and volatility.

Just like any other complicated variable, it is difficult to establish an exact link between the amount of inequality and the amount of unrest. It may be that there are other factors that prevent this from being accurately established. These factors are also probably not universal, meaning that even if they can be identified for one group or geographic region, they may not be able to be applied to any other. This is again one of the challenges planners or strategists may find when working with this literature: that the variables or assumptions that applied to one scenario cannot be applied to another. This thesis aims to address some of these challenges through the application of a simple framework that can utilize readily available open-source databases.

²³ Walter Scheidel, *The Great Leveler: Violence and the History of Inequality from the Stone Age to the Twenty-First Century*, The Princeton Economic History of the Western World (Princeton Oxford: Princeton University Press, 2017), 1.

²⁴ Parvin, "Economic Determinants of Political Unrest," 278.

²⁵ Keeley, Brian (2015), "How does income inequality affect our lives?", in *Income Inequality: The Gap between Rich and Poor*, OECD Publishing, Paris. 67.

E. RESEARCH GAP

Among the various sources that were reviewed above, there were several areas where clear answers to the research question were lacking. Firstly, there is little research that looks at the interaction between economic growth and political freedom specifically. This thesis will directly analyze that relationship to provide meaningful insight and a useful framework. For a civil or military planner, economics, and governance, which are closely related to political freedom, are key metrics for planning.²⁶ Secondly this thesis will expand on existing analyses by including a broadly available cross-national metric of economic inequality, which is included as a key factor in much of the reviewed literature.

When the literature on government type, economic growth, and unrest is reviewed, one important weakness is that the variables for government type and freedom are usually combined into one measurement. The Hogstrom paper directly addresses this problem.

Currently, the two most widely used measurements of democracy are Freedom House and Polity IV. The underlying concept for Freedom House is freedom and not democracy but the Freedom House data (political rights, civil liberties, and freedom status) are often used by researchers as measures of democracy.²⁷

In this analysis, to attempt to avoid this problem, the Freedom House data is used to generate the measurement of civil freedoms and the Polity IV data is used to measure the degree of electoral democracy. Another important aspect of this research was an attempt to better capture the broad concept of unrest, using multiple event types rather than selecting a more limited dependent variable such as civil war or mass casualty events. Using a more generalized dependent variable is especially important for planners and strategists who will be trying to analyze a situation for future problems that fall well short of catastrophic events. The final gap that was found during this review was a good explanation of unrest in high growth countries with seemingly high levels of freedom. Below, I hypothesize that this may be due to economic inequality. To test this conjecture,

²⁶ *Civil-Military Operations JP 3-57* (Washington D.C.: Joint Chiefs of Staff, 2018), https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp3_57.pdf. B-1

²⁷ Högström, "Does the Choice of Democracy Measure Matter?" 5.

it was necessary to find a measure of inequality that would be broadly accessible and useable for the current question and future analyses. The measure of inequality chosen was the GINI coefficient, which is discussed in more detail below.

III. THEORY AND HYPOTHESIS

Based on the insights derived from the works reviewed above, it is expected that economic growth should decrease the level of unrest in both authoritarian and democratic countries when the level of freedom and other variables remain constant. A higher recorded level of freedom, in both authoritarian and democratic states should also correspond to a lower level of unrest. As seen in the example of Hong Kong and mainland China, having a high level of freedom such as personal rights and freedom from surveillance and oppression leads to fewer grievances and feelings of injustice. This theory is plausible if government type is separated from individual freedom. For example, a democracy can still infringe upon person rights such as freedom from surveillance and oppression. On the other hand, authoritarian states can still allow their citizens individual freedoms without the ability to select some or all of the government leaders. It is also expected that the level of unrest will be relatively stable over time, and that the impacts from incremental changes to either freedom or economic growth will be similarly sized and incremental. It is uncertain if there will be a difference between the change in the level of unrest in authoritarian versus democratic states due to an equal change in political or economic circumstances.

The interesting question that arises with this hypothesis is whether a high level of GDP growth can offset the expected increase in unrest due to a low level of freedom, as described in the introduction to this paper. In the example in Chapter 1, it was observed that the high GDP growth of the Shenzhen area of mainland China seemed to offset the low reported level of freedom. It was also observed that the lower GDP growth in Hong Kong SAR and the loss of freedoms they were experiencing combined to produce a large amount of observed unrest. Based on these observations, it is expected that declining levels of both GDP and freedom will have a negative impact on a population, increasing the level of unrest. However, there are some aspects of this question that are difficult to understand through a purely qualitative assessment. One example of these difficult questions is whether the combination of declining freedom and low GDP growth will have a linear or non-linear impact on unrest. The statistical analysis presented below will attempt to shed more light on these details.

A final question explored in this thesis is the impact of inequality as measured by the GINI coefficient. There are countries with both a high GDP growth and high inequality, meaning that in this analysis even though they might show high levels of growth they might also show high levels of unrest due to inequality. With the theory outlined above, based on the initial observation in China, the hypotheses are as follows:

- Hypothesis 1: Countries with higher levels of economic growth will have lower levels of unrest.
- Hypothesis 2: Countries with higher levels of political freedom will have lower levels of unrest.
- Hypothesis 3: Countries with higher levels of economic inequality will have higher levels of unrest.
- Hypothesis 4: The effect of freedom on unrest will lessen in countries with higher levels of growth.
- Hypothesis 5: Freedom will reduce unrest more in democratic countries, as opposed to authoritarian countries.

IV. DATA AND METHODS

Since this thesis is focused on providing information and a framework for planners and strategists, the design not only needed to examine the link between freedom, economic growth, and unrest, but also to provide a methodology for future use. There are twofold benefits from this research. First, that showing a connection between these factors can assist in qualitative analysis of a situation where either time, data, or both is not available. Secondly, the framework should provide a quantitative methodology for future adaptation by planners. Those planners should then be able to adapt that framework to their particular situation with available data.

For the economic data, the World Bank's World Development Indicators (WDI) dataset was used. This comprehensive data includes more than 1000 metrics from 264 countries from 1960 to the present.²⁸ This data set provides us with several key metrics using numerically corrected values, so that the variables can be directly comparable. An example of corrected data would be gross domestic product (GDP) per capita, making data from multiple nations of various sizes comparable. Another example used during this analysis, the current United States dollar value as a common measurement across all the variables that were included. The downside to the WDI data is that there are numerous missing values. There are many possible reasons, chief amongst them being the unavailability of data from many states that may not have the means or reasons to record some of these metrics. Many of the variables were not calculated or reported for all countries.

For this analysis, the data for the level of freedom variable was drawn from Freedom House, which is a nonpartisan 501(c)(3) organization. Freedom House was established in the U.S. in 1941 "to promote American involvement in World War II and the fight against fascism."²⁹ Since its founding Freedom House has expanded to publishing

²⁸ "The World Bank World Development Indicators," accessed May 6, 2021, <https://databank.worldbank.org/reports.aspx?source=world-development-indicators>.

²⁹ "Freedom in the World," accessed March 24, 2021, <https://freedomhouse.org/report/freedom-world>.

multiple reports and championing democracy worldwide. Major reports include *Freedom in the World*, which measures civil and political rights, and *Freedom of the Press* which provides a measurement of media freedom. They also publish *Freedom on the Net* which provides a metric on internet freedom. There are several other reports which are published annually while there have been special reports which are not published on a reoccurring basis.³⁰

Their datasets contain several different indices of freedom for most countries around the world. The main challenge when using this data is that the most thorough ratings can only be accessed for the years 2013–2021. These ratings include 13 different metrics that measure freedom in different categories. Unfortunately, the years 2013–2021 are not a long enough period to provide the number of observations that would give confidence in the results. They also offer data from 1973–2021 but this data is much more limited in the metrics that it provides. There is a simple free or not free rating that can be used to estimate an overall rating for countries over time. This was the variable that was used to determine the level of freedom in the models below. Although this is a simplified variable, it works well for testing this hypothesis because there are enough observations in the data to make it viable. There are also ratings for political freedom and press freedom for each country, but again the issue is that their observations are limited since there are many missing values.

The first source that was used to measure unrest was the Uppsala Conflict Data Program’s (UCDP) Dyadic Dataset.³¹ UCDP is part of the Department of Peace and Conflict Research at Uppsala University. Founded in the 1980s, one of its primary intents was to collect quantitative data on armed conflict. One of its focus areas has been to make the data useable for studies while meeting scholarly requirements for comparability and transparency. The focus on usability and comparability as well as the large datasets available makes it extremely useful.

³⁰ Nate Schenkkan and Isabel Linzer, “Out of Sight, Not Out of Reach,” *Freedom House*, n.d, 76; “Election Watch for the Digital Age” (Freedom House, n.d.), <https://freedomhouse.org/report/election-watch-digital-age>; “UCDP Dyadic Dataset Version 21.1” (Uppsala University), accessed May 6, 2021, <https://www.pcr.uu.se/research/ucdp/>.

³¹ “UCDP.”

These data are available for the years 1946–2020 for nearly all countries giving us a large range to use. One of the challenges with this data source is that the events span from small-scale skirmishes to more large-scale fighting that includes mass casualties. To provide a contrasting view, the Strauss Center’s Social Conflict Analysis Database – Africa³² was used as an alternative measure of levels of conflict. While the data from the Strauss Center is more geographically constrained, it covers wider range of social conflict events, and was used to test the robustness of the results, in order to assess whether their methodology for measuring unrest would alter the results when compared to the UCDP data.

The final dataset used for the analysis was the Center for Systemic Peace’s Polity dataset. The Center for Systemic Peace datasets support research into “many issue areas related to the fundamental problems of violence in both human relations and societal-systemic development processes.”³³ The Polity data provides information on the type of government by country, and includes ratings for most countries over the period 1800–2018. For many of the countries there is only a portion of the variables included, but the most important democracy rating is given for most countries for most years, leaving very little missing data.

In each of the models presented below, the dependent variable is the level of unrest. This was chosen to address the primary question of how GDP growth and increasing or decreasing levels of freedom change the level of unrest in a given country. Assigning a unit of measurement to the level of unrest was a challenge as none of the conflict databases had assigned an overarching level of unrest number in their data for each country. To generate a consistent measure, each recorded event for a given country-year was assigned an equal value of 1. Those events were then summed for each year by country and the result was taken as the aggregate level of unrest. In this case the larger the number, meaning more events per year, corresponded to a heightened level of unrest.

³² Idean Salehyan et al, “Social Conflict in Africa: A New Database,” *International Interactions* 38, no. 4 (2012): 503–11.

³³ “Center for Systemic Peace,” The Polity Project, accessed March 24, 2021, <https://freedomhouse.org/report/freedom-world>.

The main independent variable used was GDP growth measured as a percentage by country-year from the WDI database. In this case, if all other variables were constant, we expect that country-years with higher GDP growth would have a lower level of measured unrest than those country-years that had low or negative GDP growth. The second independent variable used was the level of freedom. As was the case when measuring unrest there was a challenge when deciding how to measure the freedom in a country. Because of the short time span of the available comprehensive data for many of the country-years, the more specific numbers that are available (i.e.: numeric measurements of specific freedom indices) could not be used because they would reduce the number of observations too much. Therefore, the freedom variable was treated as a binary variable, either free or not free. This is still relevant over the time and scope of the observations as we would expect that a given country-year with a measurement of free (measured as a 1) would have less unrest with all other variables constant than a country year that was not free (measured as a 0).

The control variables used include the type of government. This data comes from the Polity dataset and ranks the countries based on their level of authoritarianism. There was an expectation that more democratic countries might show a lower level of unrest given the common relationship attributed between freedom and democracy. Population was another variable taken from the World Bank WDI data that was used as a control variable. This was used to control for the differences between large and small states where smaller states might naturally see less unrest. This was measured as the total population for each country-year. The GINI coefficient was added to account for the GDP growth that was captured by the population. GINI was used because it is expected that a highly unequal society would show that even large GDP growth might only be captured by a small percent of the population and might therefore fail to reduce unrest. Higher values of this variable indicate higher levels of economic inequality, in which more of the country's income is captured by a smaller proportion of the population.

The GINI coefficient was one of the most difficult variables to implement because of the lack of available data. Unfortunately, there are very few actual GINI measurements given in the WDI data. Those measurements that were given were often several years apart

and were sparse enough that without adding more data there were too few observations to make it a useable variable. To add in the missing data without attempting to calculate the missing values manually (which given the available data may have been impossible) linear interpolation between the known points was used. This was an acceptable method as with the bookends of actual data the interpolation could generate a probable GINI number, as changes in the GINI coefficient tend to be relatively slow in most countries. There should not be large changes either increasing or decreasing that would make the data unreliable.

The final control variable that was used was GDP per capita. This was used to account for the different starting points in a given country year for average income. For example, in a country with a very high GDP per capita a higher GDP growth may not affect unrest as much as in a country where there is a very low GDP per capita thus making the actual increase or decrease a larger real number. The hypothesis is that country-years with a high level of freedom and large positive GDP growth will have a lower level of unrest than those countries with a low level of freedom and lower or negative GDP growth.

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V. RESULTS

A. DATA ANALYSIS

For the results presented below, the model utilized is the log linear regression model, using log-transformed counts as the dependent variable. Multiple models were considered to evaluate the data including Poisson models, and negative binomial models, but these were found to have lower predictive accuracy and were therefore rejected in favor of the log-linear model form.

Table 1. Regression results: Level of unrest.

	Level of Unrest		
	Model 1 UCDP	Model 2 UCDP	Model 3 SCAD
Freedom	-0.105*** (0.014)	-0.106*** (0.014)	-0.642*** (0.095)
GDP per capita	-0.035*** (0.003)	-0.035*** (0.003)	0.272*** (0.027)
Government Type	0.004*** (0.001)	0.005*** (0.001)	0.048*** (0.006)
Population	0.075*** (0.003)	0.075*** (0.003)	0.460*** (0.023)
GDP Growth	-0.003*** (0.001)		
GPD Growth (log transformed)		-0.013*** (0.003)	-0.139*** (0.021)
Constant	-0.730*** (0.050)	-0.732*** (0.050)	-7.013*** (0.418)
Observations	6,331	6,331	1,084
MAE	0.23552	0.23551	0.69981
RMSE	0.33885	0.33886	0.86580
AIC	4,277.91729	4,278.23623	2,777.83784
BIC	4,325.18979	4,325.50872	2,812.75673
Log Likelihood	-2,131.95865	-2,132.11811	-1,381.91892

Note:

*p<0.1; **p<0.05; ***p<0.01

The analysis yielded interesting and some unexpected results, as seen in Table 1. Model 1 shows a specification using the base variables to measure the effects on the levels of unrest captured by the UCDDP dataset. The model 2 shifts to a log-transformed version of the *GDP Growth* variable to account for the non-linear effects of extreme levels of positive or negative GDP growth. Model 3 uses the SCAD data as an alternative measure of *Unrest* versus the UCDDP data. This data was used to attempt to account for the differences between the sources' methodologies in recording events of unrest. Across these model specifications, there was a clear correlation between the level of freedom and the level of unrest. In every version of the equation, including those using alternate data sets, the coefficient for *Freedom* showed a negative and statistically significant effect ($p < 0.01$). This supports the expectation in Hypothesis 2, as countries with a higher level of freedom were estimated to have a lower level of unrest.

This difference in the level of unrest was predicted based on the initial observation that people in countries with a high amount of freedom are less likely, all other things being constant, to engage in behaviors that would have been tracked as events and tallied as unrest in the model. As shown in Figure 1, as the level of freedom becomes lower (heads toward 0, which in the data corresponds to a “not free” rating) there is a clear increase in the level of unrest predicted by the model. The plot shows an approximate increase in predicted unrest from 0.15 to 0.25, meaning an increase of over 50% in expected rate of unrest. The solid lines show the predicted level of unrest at different levels of the key independent variable, with all other variables held constant at their means, while the bands show the 95% confidence interval for each effect.

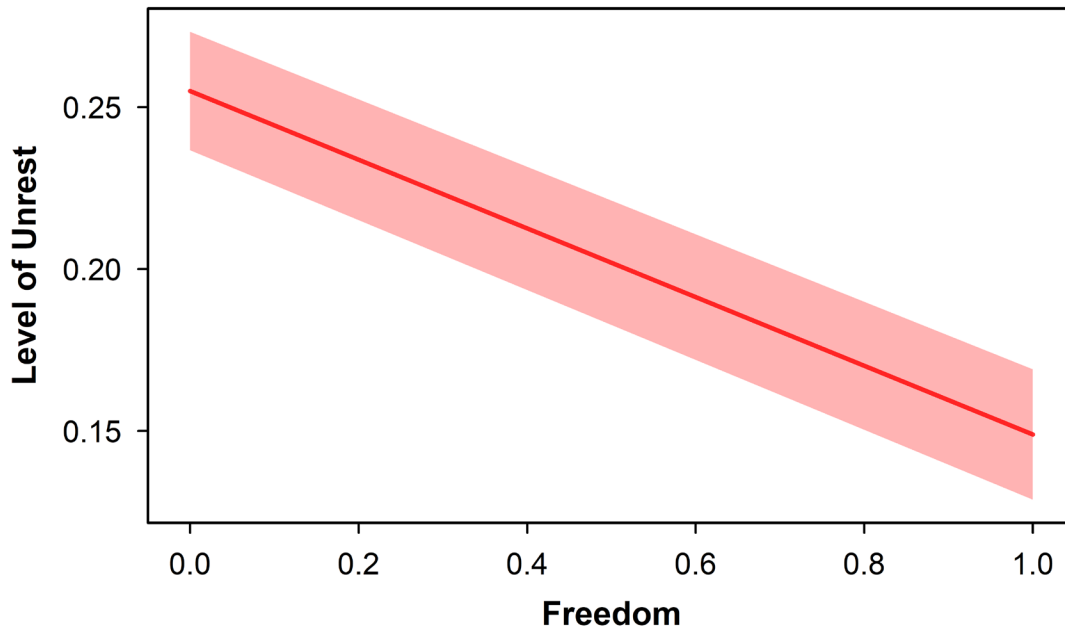


Figure 1. Change in the level of unrest by the level of freedom.

One of the most unexpected observations in the model is the relationship between the type of government, the level of freedom, and the corresponding level of unrest. In the initial analysis it was expected that more democratic countries would be correspondingly freer and therefore would have a lower observed level of events that are categorized as unrest. Interestingly, the data showed that exactly the opposite seems to be true. As countries trend toward more authoritarian, they become less likely to have incidents of unrest.

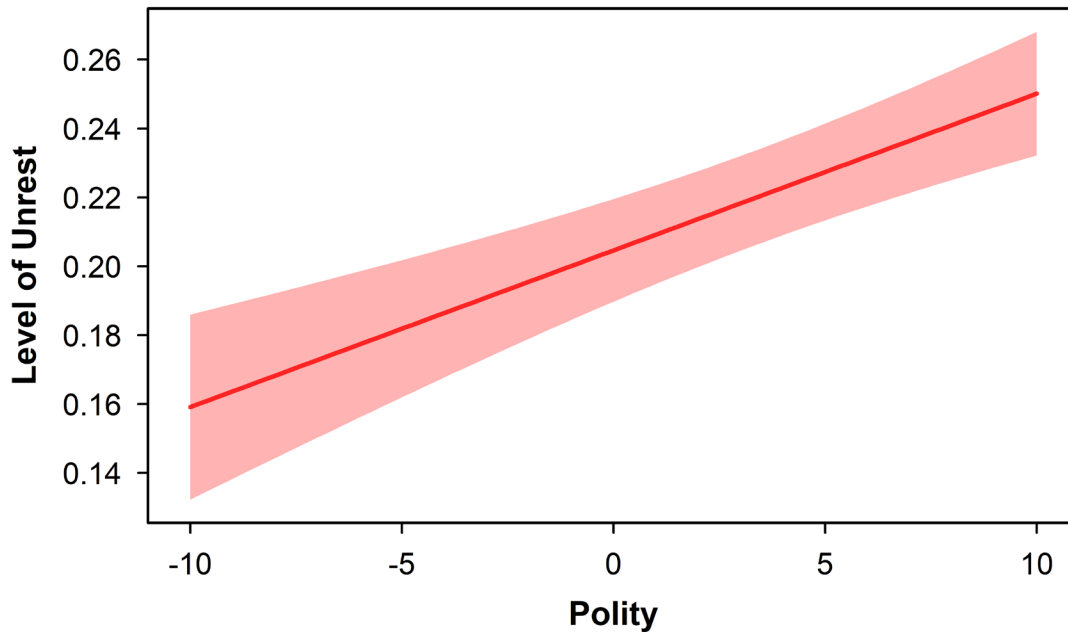


Figure 2. Change in the level of unrest by government type.

There are several possibilities as to why the more authoritarian states seem to have fewer observed incidents of unrest. More authoritarian states may be able to better suppress unrest and therefore show a lower level of events. It is also possible that the electoral competition that seems inherent in a highly democratic countries could serve to foment unrest. This observation may also be due to the measurements of freedom and democracy or autocracy. The *Freedom* variable is measured using the Freedom House composite score combining civil and press freedom into a binary variable.³⁴ The *Polity* variable measuring democracy and autocracy is made up of a composite of government constraints, electoral competition, and political openness.³⁵ Hogstrom’s research comparing the Freedom House and Polity IV data shows:

The findings of this article show that there are significant discrepancies in the results concerning statistical significance and the explanatory power of cross-national statistical analyses, according to which of the two most

³⁴ “Freedom in the World.”

³⁵ “Center for Systemic Peace.”

widely used measures of democracy, Freedom House or Polity IV, is used as the dependent variable.³⁶

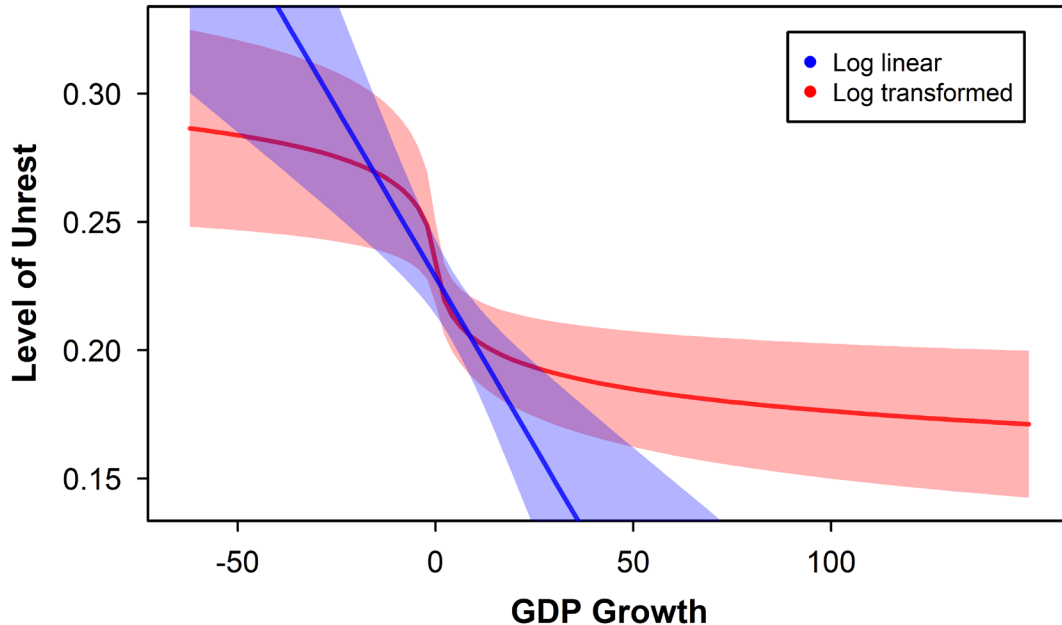


Figure 3. The level of unrest by GDP growth using UCDP data.

Finally, when the predicted values of the dependent variable are viewed it clearly supports the hypothesis that higher, positive GDP growth lowers the level of unrest. The graph in Figure 3 shows the effect of GDP growth on unrest when evaluated using the log linear method, shown by the blue line. Because of the linear nature of the equation the line is straight, showing higher unrest as the GDP growth decreases in a fixed linear relationship. However, when GDP growth is log transformed, as shown by the red line, there is a clearly non-linear relationship shown between GDP growth and unrest.

In Model 2, GDP growth was evaluated using a signed log transformation to allow for negative values to be log transformed. As seen in Figure 3, the transformed variable showed the expected relationship, that is increasing unrest with decreasing GDP growth and decreasing unrest as GDP growth became higher. An analysis of the plot shows that

³⁶ Högström, “Does the Choice of Democracy Measure Matter?”

between approximately 25% and negative 25% GDP growth there is nearly a 50% change in the expected level of unrest. It also showed that the relationship was not entirely linear. While this was not expected initially, on examining the graph it can be explained rationally. Where the curve flattens out it means that GDP growth is having less of an effect on unrest. Logically if there is extremely high or extremely low GDP growth, this could easily be true. At a certain level of positive growth there may be other variables that account for more of the unrest. Conversely at lower levels or extreme negative growth the GDP percentage may take a backseat to more pressing issues. In real numbers the level of unrest grows or shrinks very quickly with a comparatively small change in GDP. Interestingly models with the level of unrest measured from the UCDP data and the SCAD data showed essentially the same effect, as can be seen when the same relationship is plotted using the SCAD data in Figure 4.

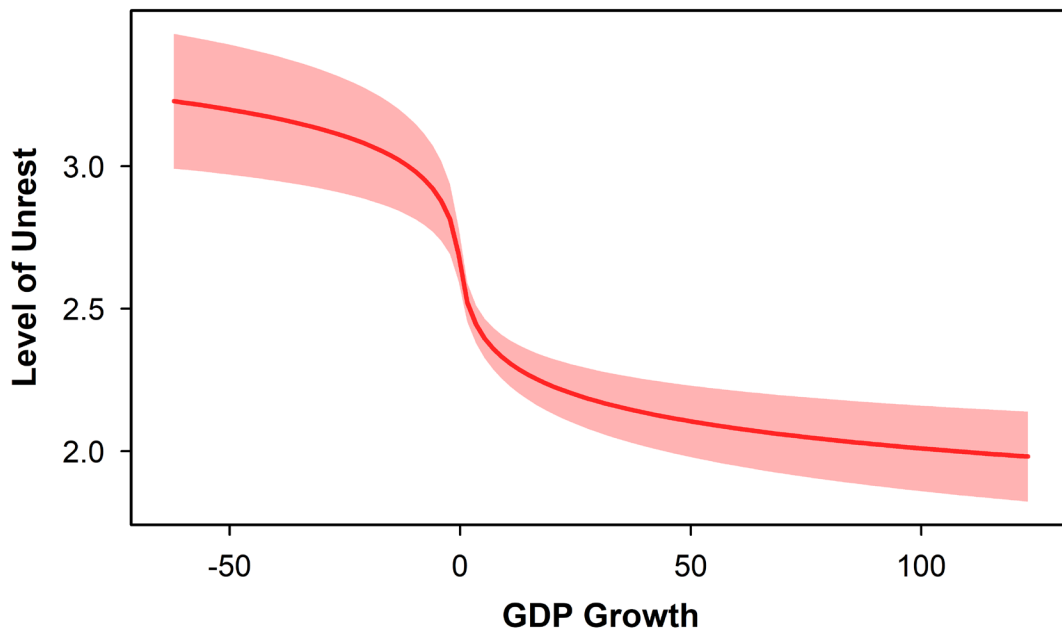


Figure 4. The level of unrest by GDP growth using SCAD data.

Table 2. Regression results continued: Level of unrest

	Level of Unrest		
	Model 4 UCDP	Model 5 UCDP	Model 6 UCDP
Freedom	-0.155*** (0.022)	0.113*** (0.038)	-0.166*** (0.017)
GDP per capita	-0.025*** (0.007)	-0.028*** (0.003)	-0.034*** (0.003)
Government Type	0.007*** (0.002)	0.005*** (0.001)	0.005*** (0.001)
Population	0.080*** (0.005)	0.076*** (0.003)	0.076*** (0.003)
GINI	-0.078** (0.035)		
GDP Growth(log transformed)	0.003 (0.007)	-0.013*** (0.003)	-0.025*** (0.004)
Freedom:Government Type		-0.027*** (0.004)	
Freedom:GDP Growth (log transformed)			0.048*** (0.008)
Constant	-0.649*** (0.168)	-0.802*** (0.051)	-0.742*** (0.050)
Observations	1,633	6,331	6,331
MAE	0.19673	0.23504	0.23511
RMSE	0.29443	0.33786	0.33784
AIC	656.88367	4,242.83719	4,241.87834
BIC	700.06906	4,296.86290	4,295.90405
Log Likelihood	-320.44184	-2,113.41860	-2,112.93917
Note:	*p<0.1; **p<0.05; ***p<0.01		

Table 2 shows the impact of adding new variables and interaction terms to Model 2. In Model 4 the GINI coefficient was added to understand the impact of inequality on unrest. This model shows that when inequality is added *GDP growth* loses statistical significance while the new inequality coefficient has a p-value less than 0.05. Due to the lack of data points to measure inequality there are also fewer observations in Model 4 than any other model using the UCDP database. Model 5 included an interaction term between

Freedom and *Government Type* to better test Hypothesis 5. When the interaction term was added the coefficient of freedom switched from negative to positive while the new interaction term was negative and statistically significant with a p-value less than 0.01. All of the other variables in Model 5 remained statistically significant. In Model 6 an interaction term between *Freedom* and *GDP growth* was used to observe the effects of freedom conditioned by growth. This interaction term was statistically significant with a p-value less than 0.01. Interestingly, unlike Model 5 the coefficient for *Freedom* is once again negative. As with Model 5, all of the variables remained statistically significant.

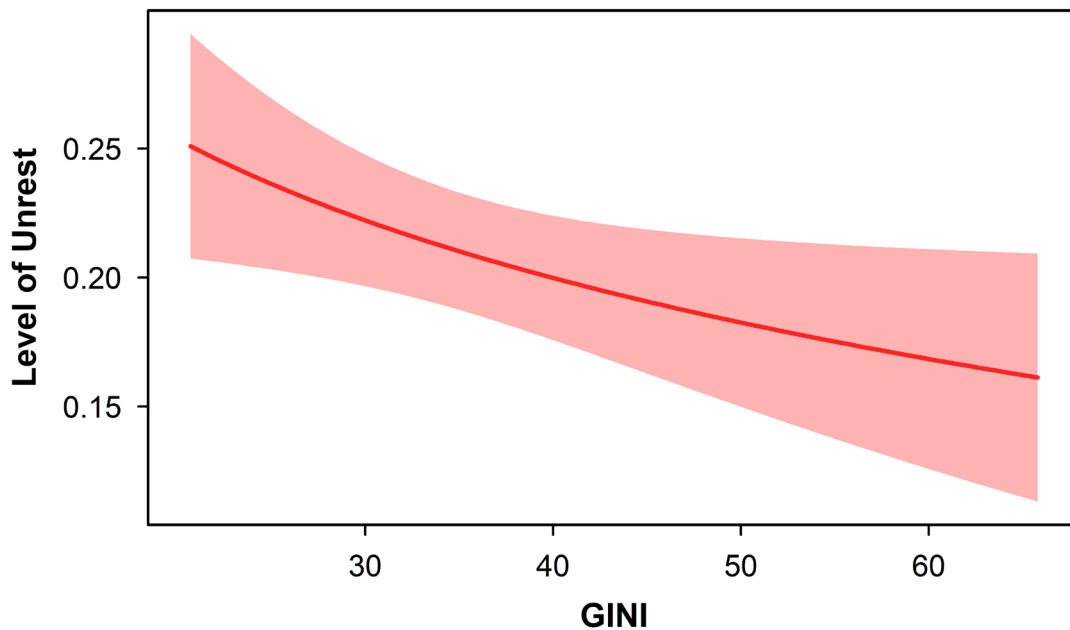


Figure 5. The level of unrest by GINI coefficient

When the results from the analysis of the different models are reviewed there are also some interesting additional findings observed. First Model 4, that included the GINI coefficient, had the lowest root mean square error. In this model the coefficient for GDP growth was also not statistically significant, which challenged Hypothesis 1, and did not support Hypothesis 4, by showing that once we account for differences in inequality, the estimated effects of GDP growth are less significant. However, the relationship estimated

for the GINI coefficient is actually the opposite of what was predicted by Hypothesis 3, as higher levels of inequality are found to be associated with lower levels of unrest. There could be several reasons for this. It is possible that since the number of observations was much smaller than the models that did not include the GINI coefficient, that it is causing an issue with the assessment of the effects of GDP growth and inequality, created by collinearity between growth and inequality. It is also possible that the level of inequality in society is a much more powerful driver of unrest than GDP growth, but more research is needed to understand why concentrated income might be associated with more effective suppression of unrest. While this might point to an important factor for planners to consider in their own assessments it does not necessarily mean that economic growth does not lower unrest. Rather, these findings imply that economic growth that is concentrated within a narrower segment of a population may facilitate efforts by the government's supporters to suppress unrest to a high enough degree that it overwhelms the increase in expected unrest due to grievances spurred by inequality.

As seen in Figure 6. there is a marked difference in the effect of GDP growth on unrest, which is conditioned by Freedom. The interaction term between the variables Freedom and GDP growth was used to better understand the combined effects of these variables on unrest. These results for Model 5, in Table 2, show that the interaction term is statistically significant and has a p-value less than 0.01. These findings partially support Hypothesis 1, as when there is a low level of freedom, economic growth reduces unrest. Conversely in free countries higher GDP Growth increases unrest. At negative and low levels of GDP growth countries that are free have a much lower but increasing level of unrest as compared to countries that are not free. Near stagnant GDP growth the difference in unrest between free and not free countries rapidly shrinks. At extremely high levels of GDP growth countries with high levels of freedom actually experience an increase in unrest while not free counties continue the downward trend. This supports Hypothesis 5 as increased freedom does have a modulating effect to offset low or negative GDP growth although at extremely high levels of growth this effect leads to greater unrest. A relationship like this reinforces the notion that a country like China experiencing strong GDP growth and declining freedoms could still have a lower level of unrest due to the

downward trend of unrest in not free countries at high levels of GDP growth. It also still allows for a situation like Hong Kong's lower levels of freedom induce more unrest when GDP growth is low.³⁷

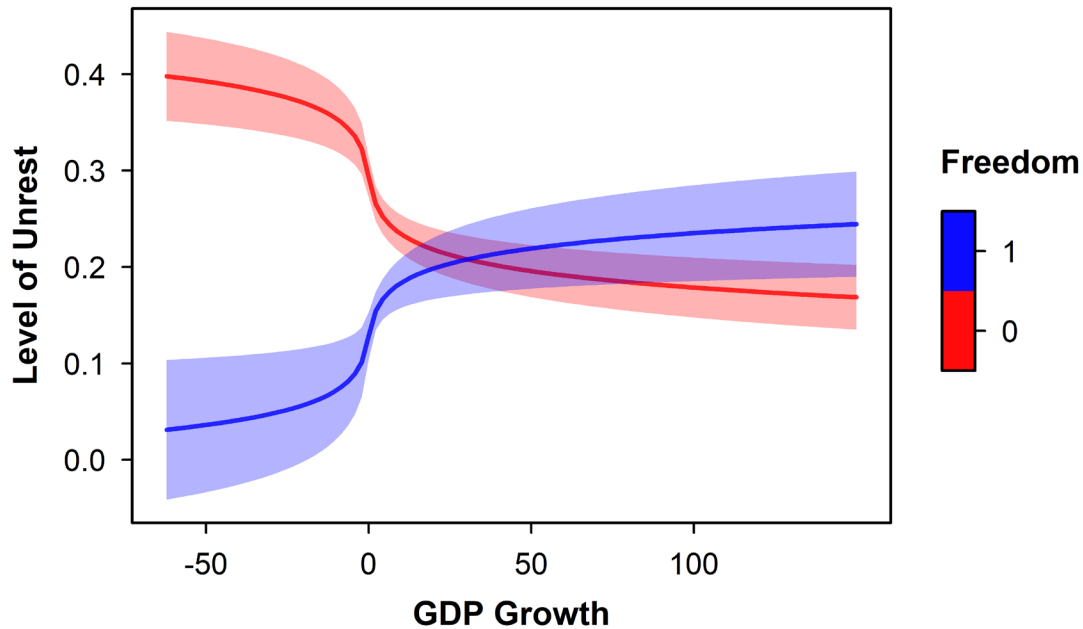


Figure 6. Change in the level of unrest with the interaction of freedom and growth.

In Figure 7, the effect of government type as conditioned by freedom is shown. The figure shows that in all but the most democratic countries high levels of freedom lead to higher levels of unrest. In the most authoritarian countries higher levels of freedom have a strong effect in inducing unrest. The figure also shows that overall countries with a high level of freedom have a greater change in unrest due to the level of democracy or authoritarianism. Finally, the plot reinforces the findings that authoritarian countries with low freedoms are able to manage unrest better than authoritarian countries with high levels of freedom.

³⁷ "WDI."

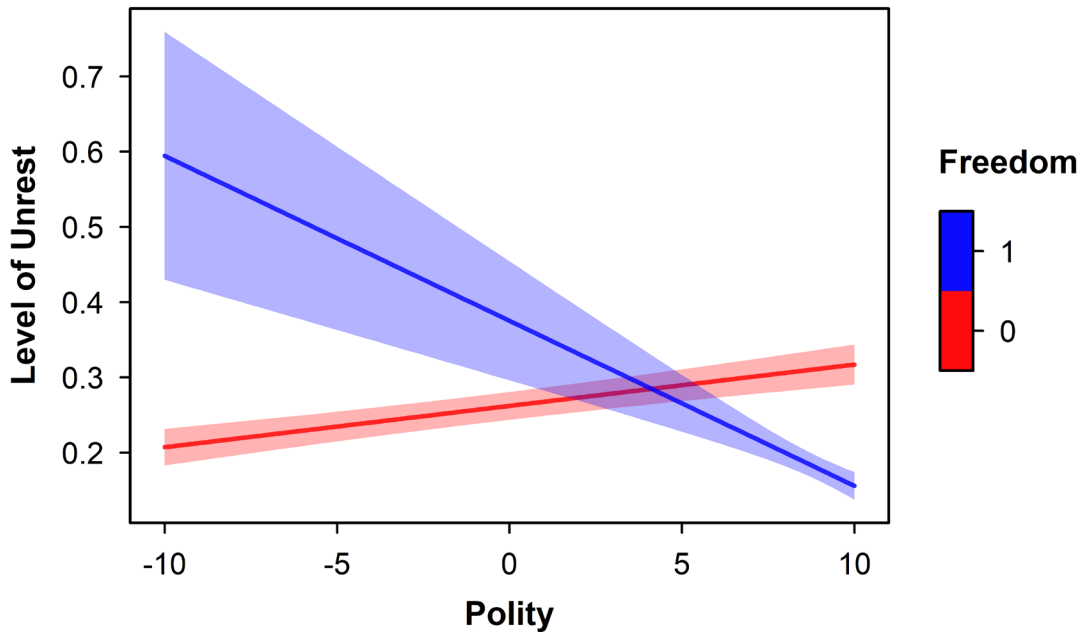


Figure 7. Change in the level of unrest with the interaction of freedom and government type.

There is also the possibility that there is missing data and that the events that were used to generate the level of unrest variable are less likely to be reported or recorded in authoritarian countries. This discrepancy may change or disappear if different data or methods are used to determine the level of unrest. It must be noted, however, that this was done in Model 4, where the UCDP data was swapped for the SCAD data to measure the level of unrest. In both cases the trend was that more authoritarian countries generally have a lower level of unrest. In their paper *Why Did the West Extend the Franchise?* the authors found:

Our model predicts that democratization is more likely when inequality is high. This result however ignores another important effect. In general, when inequality is high, democratization is quite damaging to the elite who will be taxed more heavily. This implies that the impact of inequality on democratization will be determined by the interplay of two offsetting forces, which appears to be an interesting issue to study. Furthermore, we have not

allowed the elite to use a “repression” strategy, clearly a relevant option in the experiences of Latin American and African countries.³⁸

This quote supports the notion that there may be some effect from the concentration of wealth and power that reduces unrest outside of increasing growth or freedom. This issue may also point to biases in western thinking that more choice and freedom in democracy leads to a more peaceful society. Figure 2 shows the predicted level of unrest based on government type according to the Polity data, which ranges from strongly democratic countries at +10 to strongly autocratic countries at -10. Analyzing the plot shows more than a 30% difference in the level of unrest between fully authoritarian and fully democratic countries.

More analysis and testing may provide better support for the hypothesis. One of the most pertinent things that could be improved upon is the number of observations for the final model. If a better data source for the GINI coefficient can be found, then the results may be more reliable. Another area where further data would be beneficial is the measurement of political freedom. If there were a measurement that not only showed free or not free but also the degree of change by year, then this might explain more of the year-to-year changes in unrest. The impact and significance of the effect of GDP growth and inequality on levels of unrest is incredibly interesting and could prove to be important for strategists and planners working the human domain.

B. CONCLUSION

This research should serve as a reference and guide for strategists and planners evaluating the causes of unrest in their areas of responsibility. While not a comprehensive tool to address every cause of unrest, this thesis provides evidence of important links to some important drivers of unrest, namely economic indicators and levels of freedom. Countries that are experiencing economic downturns or a declining level of freedoms may be analyzed further for signs of unrest. Those countries experiencing a shift in markers for inequality may also be evaluated for increases in unrest. Conversely those countries that

³⁸ D. Acemoglu and J. A. Robinson, “Why Did the West Extend the Franchise? Democracy, Inequality, and Growth in Historical Perspective,” *The Quarterly Journal of Economics* 115, no. 4 (November 1, 2000): 1167–99, <https://doi.org/10.1162/003355300555042>. 36

show robust economic growth, and a high degree of freedom, can be estimated to have correspondingly lower levels of unrest.

Currently it is a difficult challenge for planners and strategists to understand and estimate the impact and interaction of these changes. Much of the analysis currently conducted consists of qualitative analysis sometimes factoring in data like what was used in this thesis but rarely used in a systematic quantitative fashion. Another challenge is understanding how the variables interact with each other and at what point their values may point to increases in unrest. Hopefully the methods and results shown in this thesis can help to support a deeper understanding of these variables and their interactions as well as stimulating a new perspective through which to view them.

Most importantly economic growth and freedom decidedly impact a country's level of unrest. Along with the impact of economic growth the authoritarian or democratic nature of a country was shown to be important and should be a valuable metric for a planner. As authoritarian countries were shown to have correspondingly lower levels of unrest than democratic countries, planners may use this in their assessments. There is also a possibility here for future work to show why and how authoritarian countries show lower levels of unrest than their democratic counterparts.

Some of the findings presented here would also benefit from further analysis with expanded data. In particular, it was surprising to see that both lower levels of electoral democracy and higher levels of economic inequality were associated with lower levels of unrest. The implication of this seems to be that our naïve expectations about the role of grievances in producing unrest may be incorrect. Contrary to our expectations, the analysis shows that both a higher level of authoritarianism in addition to lower levels of freedom may actually lower events of unrest at low levels of GDP growth than authoritarian countries with higher levels of freedom. Correspondingly, in more free societies lower growth corresponded to lower unrest, as seen in Figure 6. There could be several factors contributing to these surprising differences in the effects of freedom and wealth across societies. One factor that was not able to be identified clearly but may exist is that repression or the ability to quell unrest exists and is higher in countries with high authoritarianism or high inequality.

Since the data used in this study were global in scope, this could challenge the strongly western view that democracies have lower levels of unrest. This does not, however, mean that democracies are somehow less capable or stable than authoritarian states. This is because the measure used generate unrest included multiple types of incidents, it is possible that the more severe incidents such as civil war or mass casualty events occur more often in authoritarian countries. Research using different measures and severities of “unrest” may show trends that are not found here due to the wide scope of events measured.

Planners may also be able to use future predictions made about these levels to predict future levels of unrest and therefore be able to adapt their strategies accordingly. For example, economic predictions and a prediction in the trend of the freedom enjoyed by a country should allow for at least some ability to predict possible increases or decreases in the level of unrest. Further testing of these ideas and inclusion of new and different data sets may provide valuable insights into the drivers of unrest that are above and beyond what was previously available to planners.

LIST OF REFERENCES

- “2021 Index of Economic Freedom.” The Heritage Foundation, 2021.
<https://www.heritage.org/index/download>.
- Acemoglu, D., and J. A. Robinson. “Why Did the West Extend the Franchise? Democracy, Inequality, and Growth in Historical Perspective.” *The Quarterly Journal of Economics* 115, no. 4 (November 1, 2000): 1167–99. <https://doi.org/10.1162/003355300555042>.
- Alesina, Alberto, Sule Özler, Nouriel Roubini, and Phillip Swagel. “Political Instability and Economic Growth.” *Journal of Economic Growth* 1, no. 2 (June 1, 1996): 189–211. <https://doi.org/10.1007/BF00138862>.
- Brückner, Markus, and Antonio Ciccone. “International Commodity Prices, Growth and the Outbreak of Civil War in Sub-Saharan Africa.” *The Economic Journal* 120, no. 544 (May 1, 2010): 519–34. <https://doi.org/10.1111/j.1468-0297.2010.02353.x>.
- Civil-Military Operations JP 3-57*. Washington, D.C.: Joint Chiefs of Staff, 2018.
https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp3_57.pdf.
- Collier, Paul, and Anke Hoeffler. “On Economic Causes of Civil War.” *Oxford Economic Papers* 50, no. 4 (October 1, 1998): 563–73. <https://doi.org/10.1093/oeq/50.4.563>.
- Elbadawi, Ibrahim A. “Civil Wars and Poverty: The Role of External Interventions, Political Rights and Economic Growth,” n.d., 40.
- “Election Watch for the Digital Age.” Freedom House, n.d. <https://freedomhouse.org/report/election-watch-digital-age>.
- Fearon, James D., and David D. Laitin. “Ethnicity, Insurgency, and Civil War.” *American Political Science Review* 97, no. 01 (February 2003): 75–90. <https://doi.org/10.1017/S0003055403000534>.
- Feng, Yi. *Democracy, Governance, and Economic Performance: Theory and Evidence*. Cambridge, Mass: MIT Press, 2003.
- “Freedom in the World.” Accessed March 24, 2021. <https://freedomhouse.org/report/freedom-world>.
- Giskemo, Gunhild Gram. “Exploring the Relationship between Socio-Economic Inequality, Political Instability and Economic Growth: Why Do We Know so Little?” The University of Bergen, May 2008. <https://hdl.handle.net/1956/5381>.

- Hendrix, Cullen S, and Stephan Haggard. “Global Food Prices, Regime Type, and Urban Unrest in the Developing World.” *Journal of Peace Research* 52, no. 2 (March 2015): 143–57. <https://doi.org/10.1177/0022343314561599>.
- Högström, John. “Does the Choice of Democracy Measure Matter? Comparisons between the Two Leading Democracy Indices, Freedom House and Polity IV.” *Government and Opposition* 48, no. 2 (April 2013): 201–21. <https://doi.org/10.1017/gov.2012.10>.
- Idean Salehyan, Cullen S. Hendrix, Jesse Hamner, Christina Case, Christopher Linebarger, Emily Stull, and Jennifer Williams. “Social Conflict in Africa: A New Database.” *International Interactions* 38, no. 4 (2012): 503–11.
- “Interm National Security Strategic Guidance.” The White House, March 2021. <https://www.whitehouse.gov/wp-content/uploads/2021/03/NSC-1v2.pdf>.
- Joint Chiefs of Staff. “JP 3-0 Joint Operations,” January 17, 2017. https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp3_0ch1.pdf?ver=2018-11-27-160457-910.
- MacCulloch, Robert, and Silvia Pezzini. “The Roles of Freedom, Growth, and Religion in the Taste for Revolution.” *The Journal of Law and Economics* 53, no. 2 (May 2010): 329–58. <https://doi.org/10.1086/605093>.
- Parvin, Manoucher. “Economic Determinants of Political Unrest: An Econometric Approach.” *Journal of Conflict Resolution* 17, no. 2 (June 1973): 271–96. <https://doi.org/10.1177/002200277301700205>.
- The Polity Project. “Center for Systemic Peace.” Accessed March 24, 2021. <https://freedomhouse.org/report/freedom-world>.
- Przeworski, Adam, and Fernando Limongi. “Political Regimes and Economic Growth.” *Journal of Economic Perspectives* 7, no. 3 (August 1, 1993): 51–69. <https://doi.org/10.1257/jep.7.3.51>.
- Rivera-Batiz, Francisco L. “Democracy, Governance, and Economic Growth: Theory and Evidence.” *Review of Development Economics* 6, no. 2 (June 2002): 44.
- Sambanis, Nicholas. “A Review of Recent Advances and Future Directions in the Quantitative Literature on Civil War.” *Defence and Peace Economics* 13, no. 3 (January 2002): 215–43. <https://doi.org/10.1080/10242690210976>.
- Scheidel, Walter. *The Great Leveler: Violence and the History of Inequality from the Stone Age to the Twenty-First Century*. The Princeton Economic History of the Western World. Princeton Oxford: Princeton University Press, 2017.
- Schenkkan, Nate, and Isabel Linzer. “Out of Sight, Not Out of Reach.” *Freedom House*, n.d., 76.

“UCDP Dyadic Dataset Version 21.1.” Uppsala University. Accessed May 6, 2021.
<https://www.pcr.uu.se/research/ucdp/>.

“Uppsala Conflict Data Program Department of Peace and Conflict Research.” Database.
Accessed March 23, 2021. <https://ucdp.uu.se/exploratory>.

Vasquez, Ian, and Fred McMahon. *The Human Freedom Index 2020*, 2020.
<http://www.deslibris.ca/ID/10105748>.

“The World Bank World Development Indicators.” Accessed May 6, 2021.
<https://databank.worldbank.org/reports.aspx?source=world-development-indicators>.

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