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Cambridge Risk Framework

Social Unrest: Stress Test Scenario

MILLENNIAL UPRISING SOCIAL UNREST SCENARIO

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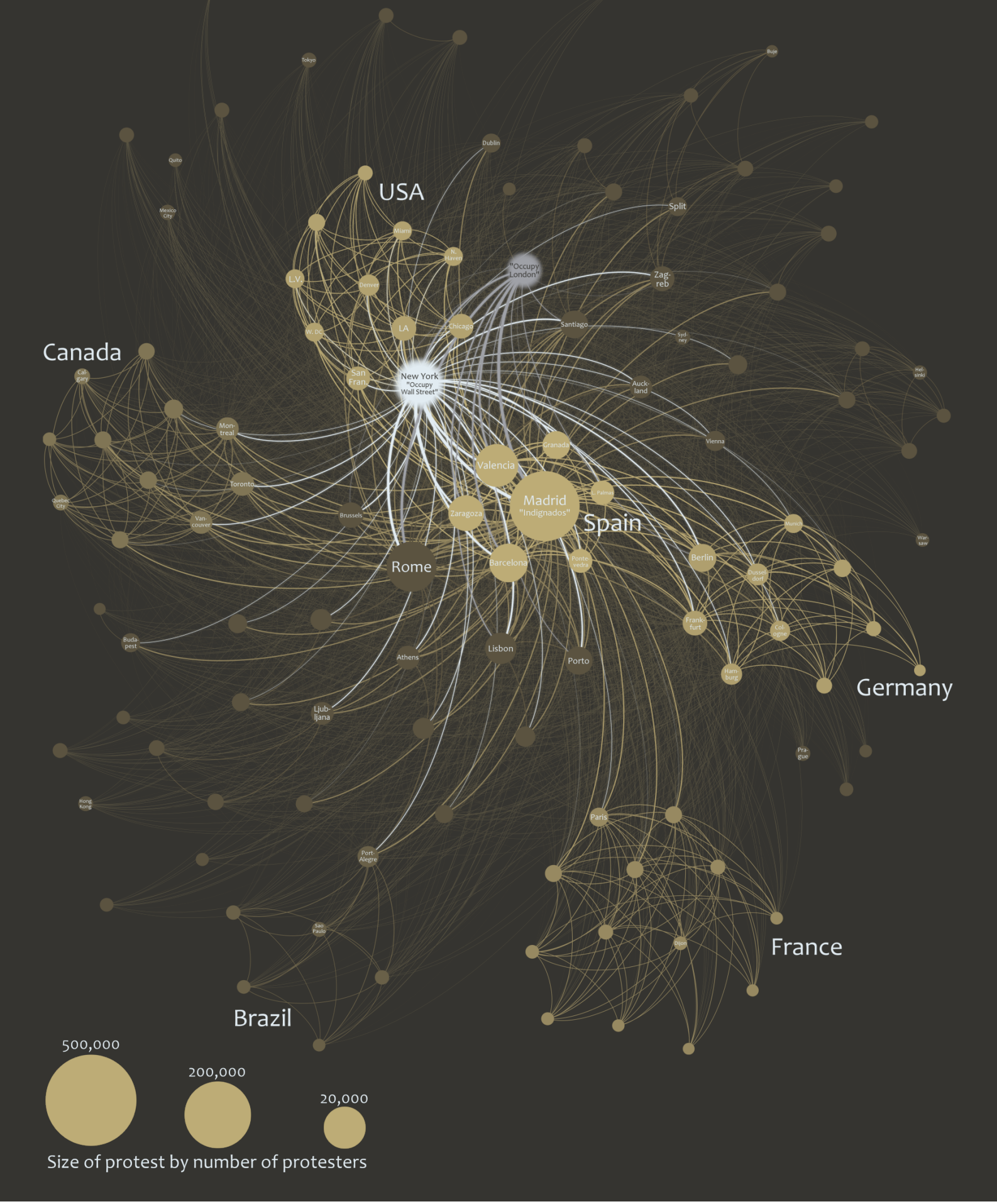

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Systemic Social Unrest
Social media connectivity between cities
Geographical spread of 'Occupy' movement hashtags tweets, Sept-Oct 2011, coordinating political protests in 950 cities across the world.

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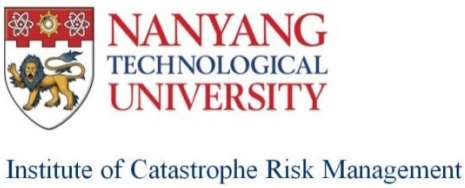

This report describes a hypothetical scenario developed as a stress test for risk management purposes. It does not constitute a prediction. The Cambridge Centre for Risk Studies develops hypothetical scenarios for use in improving business resilience to shocks. These are contingency scenarios used for 'what-if' studies and do not constitute forecasts of what is likely to happen.

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Social Unrest: Millennial Uprising Scenario

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Global social unrest scenario

This report is one of a series of stress test scenarios that have been developed by the Centre for Risk Studies to explore management processes for dealing with an extreme shock. It is not a prediction.

Social unrest has become a growing issue for global businesses, posing a potential for disruption in many countries where international business operations are based. The Arab Spring movement caused political change and turmoil in a chain of countries throughout and around the Middle East from 2010 to 2013. The 'Occupy' movement saw hundreds of thousands of protestors on the streets of hundreds of cities in multiple countries in a coordinated campaign in 2011 and 2012. Businesses are increasingly concerned about the topic of social unrest: Where might it occur? What drives it? How can we plan our business to be more resilient to future occurrences of social unrest?

This study provides a framework to understand social unrest, and the political instability that can result. It describes a hypothetical scenario of an extreme episode of social unrest that businesses can use as stress test scenario to explore their own ability to manage through a crisis of this type.

The new systemic nature of social unrest

Social unrest has punctuated the past of most countries, prompting political change and occasional revolution. There is a long history of populations turning on their leaders over causes such as food shortages, unpopular wars, and high taxes. What is different and new about the episodes of civil disorder in the early 21st century is their systemic nature: multiple countries simultaneously expressing dissatisfaction and seeking change.

This coordination is enabled by uncontrollable social media and new democratized communication – it is now possible for ideas and actions to be spread through the twittersphere and cell phone messaging to bring thousands of people together in coordinated protests. Social unrest is now a systemic threat, capable of destabilizing many countries at once, posing potential threats to entire regions of the world, or demographic segments of the population. This is changing the way that businesses are thinking about their risk of political instability.

'Millennial Uprising' scenario

A key driver of social unrest is youth disaffectation – many of the key precedents of civil disorder are fuelled by perceived lack of opportunity for a young generation. For our stress test we focus on the issue of high unemployment in the latest generation of young graduates around the globe – the so-called 'Millennial' generation, born between 1980 and the early 2000s, popularised by Strauss and Howe in their book *Millennials Rising*. Lack of opportunity for the Millennial generation of Arab youth was one of the underlying factors of the Arab Spring. High rates of unemployment in young graduates in countries like Spain and Greece gave rise to the '*indignados*' movement in 2011.

In this report we develop a hypothetical scenario where Millennial unemployment fuels a period of social unrest that is more extreme than those seen to date. It is systemic and occurs in the major homelands of United States, Western and Southern Europe and also cascades throughout the world.

A '1-in-100' stress test scenario

Stress test scenarios developed by the Centre for Risk Studies are made roughly comparable by choosing a severity with a chance of 1-in-100 that it could occur in any year. A key metric for social unrest is the number of cities in which simultaneous outbreaks might occur. In our stress test scenario we postulate 1,500 major cities being affected in one uprising. Social unrest has various mechanisms of escalation, ranging from social unrest, through civil disorder and mob rule, ultimately to rebellion. In this scenario we stop short of imagining armed rebellion in western countries but we depict the severe end of social unrest with periods of mob rule in key business centres as our extreme scenario.

We outline the timing and stages of the Millennial Uprising Scenario. We subsequently estimate direct losses, then global macroeconomic losses and finally impacts on financial markets.

Millennial youth: educated & disenfranchised

Despite a period of economic growth and increasing corporate profits, high youth unemployment, even for university graduates, is a structural problem in Europe, North America and many other countries.

The trigger for the civil disorder could be almost any incident. In our scenario, it is an expensive bailout of a bankrupt financial institution that triggers youth anger. It sparks a campaign of protests against financial bail-outs, austerity measures, and public sector job cuts. The protests are led by youth activists but supported globally by public opinion, trade unions, and the labour movement.

Rallies, non-compliance and hacktivism

Massive public rallies erupt in Europe and the US, fostered by social media. A non-compliance movement coordinates a boycott of major brands, with picketing protests at docks, air terminals, rail and road hubs aiming to disrupt global trade. Hacker groups mount cyber attacks on commercial targets.

Riots, arson and looting

Protest marches are held in the commercial and financial centres of major cities in coordinated actions over several months. Many thousands of protestors attend these rallies, bringing the cities to a halt each time, mostly through peaceful protest.

Extremist agitators escalate several of the protests by triggering violence and mob rule in areas of the business districts. They engage in riots against the police, setting fire to cars, and damaging and looting buildings. There are spectacular incidences of arson attacks on prestigious corporate buildings.

Concessions and social change

Eventually the period of protest is brought to an end though government and commercial concessions, and by disavowal of the violent elements by leaders of the protest movement. An uneasy normality is re-established, but repercussions continue and re-shape the social landscape for years to come.

Scenario variants

We provide variants of the scenario to help understand the sensitivities of the assumptions. The standard scenario, S1, has 9 months of protests taking place in cities predominantly in North America and Europe. A more severe version, S2, assumes greater impact of the events on employment, consumption, inflation and market confidence. The most extreme variant, X1, applies more damage to economic drivers and extends the uprising to Brazil, Russia, India and South Africa.

Direct impacts

The riots and protests result in many minor, and some major, incidences of property damage, vehicle destruction, looting, emergency response costs, and pay-outs for compensation. There are some deaths and injuries, and some are sustained by employees in the course of their work, leading to liabilities and compensation claims.

Most of the direct impact of the scenario is in disruption. There are many days of lost production due to strike action, protests closing down city centres, halting of public transport, and picketing of the transportation of goods.

Direct action from the activists causes damage to the brands and reputations of major companies, and boycotts hit their sales and stock prices. Companies who are targeted have to rapidly respond to consumer pressure to minimize their consequences.

Macroeconomic loss of $1.6 to $8 trillion

During the scenario the economies of North America and Europe suffer from disruption and reduction in output from strikes and workforce absenteeism, a drop in imports and exports due to targeted trade disruption, and a loss of demand and consumption. These trigger a fall in confidence by market investors and consumers. Inflation rises as the demand for goods and services fights for supply.

The aftermath affects output and confidence for several years and the consequences are felt by the trading partners of the countries impacted and throughout the global economy. Although the Millennial Uprising takes place over a few months, the estimated loss in global GDP output over the next 5 years ('GDP@Risk') amounts to $1.6 trillion for the S1 variant of the scenario, $5.3 trillion for S2, and $8 trillion for the extreme X1 variant.

For context, the Great Financial Crisis of 2007-2012 caused a loss of output of $20 trillion over 5 years.

Financial market impact

The macroeconomic consequences also affect the markets and will impact investment portfolios. On a high-quality, low-risk standardized portfolio, the scenario inflicts years of significant volatility, with relative returns fluctuating between -1.0% and +1.25%. Market consequences include significant changes in the valuation fundamentals of equities, driven by loss of investor confidence . By contrast, fixed income assets have relatively stable returns.

Eurozone and UK assets are substantially negatively impacted. In the US assets are less affected.

Risk management strategies

This scenario is an illustration of the risks posed by social unrest. The Millennium Uprising is just one example of a wide range of scenarios that could occur. This scenario aims to improve organizations' operational risk management plans around contingencies, and strategies for surviving financial and counterparty challenges. It provides a stress test of a loss scenario that is likely to correlate with a major capital market stress for financial services.

Reducing social unrest

Social unrest poses a serious and growing societal threat. Social disenfranchisement and polarizing opportunity differences, particularly in the world's youth, is the current driving force. It is now systemic and has the potential to manifest in large scale simultaneous occurrences. Collective action is required to diffuse the risk, from individual actions, to global approaches by policy-makers. Social unrest may always be with us, but reducing the potential for extreme outbreaks will benefit everyone.

2 Stress Test Scenarios

This report describes a plausible extreme future scenario and explores the effects that it would have. It is not a prediction. It is a 'what-if?' exercise, designed to provide a stress test for risk management exercises by companies who want to assess how their business systems would hold up under extreme circumstances.

This report is one of a series of stress test scenarios that have been developed by the Centre for Risk Studies to explore the management processes of dealing with an extreme shock event. Each individual scenario may reveal some aspects of potential vulnerabilities for an organization, but they are intended to be explored as a suite, to identify ways of improving overall resilience to surprise shocks that are complex and have many faceted impacts.

The scenarios have been designed in a number of ways. Firstly they are selected as plausible, but not probable, extreme events that would disrupt normal life and business activity. They are illustrative of the type of disruption that would occur with a particular category of 'threat' – i.e. a cause of disruption. In this example we explore the consequences of a Millennial Uprising, as a representation of the threat of social unrest disrupting daily life. Other threats considered in our suite of stress test scenarios include geopolitical conflicts, global pandemics, extreme weather events, cyber catastrophes and financial crises.

Complex risks cause macroeconomic impacts

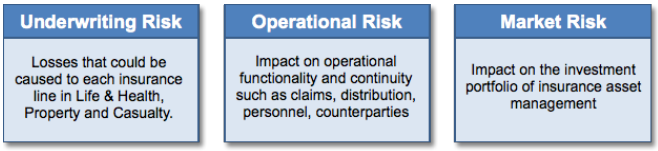
These threats are of interest because they are complex risks – they impact the networks of activities that underpin the global economy, disrupting the interrelationships that drive business, and causing losses in unexpected ways and places. They have multiple consequences in causing severe direct losses but also operational challenges to business continuity, cascades of effects on counterparties and the macroeconomy in general, and on the capital markets and investment portfolios.

In these scenarios we explore how these effects might occur and try to trace the flow of consequences from initial losses to macroeconomic impact, and to market effects in the change of returns that would occur in a standardized investment portfolio.

The stress test is aimed at providing an illustration of the effects of an extreme event, to help a general audience understand the potential for events of this type to cause disruption and economic loss. It is aimed at informing the risk management decisions of a number of different communities.

Use of scenario by insurance companies

The insurance industry uses scenarios as stress tests for their risk capital assessments, with explicit return periods of capital adequacy required by internal management, or for regulatory or reporting purposes such as AM Best, Solvency II, Lloyd's Realistic Disaster Scenarios, or other requirements. We offer this stress test scenario as a potential addition to the suite of scenarios that insurers may choose to use for their own internal purposes. The particular contribution of this work is the assessment of the correlation of potential underwriting losses with an investment portfolio loss, while also considering the operational risks that could be challenging the business at the same time.



For insurers, the scenario provides an indication of potential losses across different silos of risk

The scenario attempts to assess indicatively where losses might occur across a range of different lines of insurance underwriting. Where we have access to data on total insurance industry exposure we have attempted some indicative quantification of the potential order of magnitude of losses. Insurers interested in assessing the impact to their own portfolios can apply these loss ratios to their own exposure in these lines of business.

We have also estimated how the event would impact investment asset values, using a standardized high quality, fixed income oriented portfolio to show indicative aggregate returns. Investment managers could apply these asset values changes to their own portfolio structures to see how the scenario would potentially affect their holdings.

Risk capital models make assumptions about correlations between underwriting loss and market risk. This report explores how this correlation occurs and provides a detailed example for one scenario.

It does not provide a probabilistic view of this correlation, but it does provide additional variants to the scenario that act as sensitivity tests and indicative additional data points around the primary narrative.

The scenario is deterministic and is not designed to provide exceedance probability data points. It is very approximately selected to be in the range of the 1-in-100 annual probability of occurrence worldwide, but not rigorously determined.

Use of scenario by investment managers

The scenario provides a timeline and an estimation of the change of fundamental value in assets in an investment portfolio. These are segmented into broad asset classes and geographical markets to provide indicative directional movements.

The scenario enables investment managers to optimize portfolio strategies against shocks

These provide insights for investment managers into likely market movements that would occur if an event of this type started to play out. In real events, market movements are chaotic and difficult to analyse. This analysis suggests how the underlying fundamentals are likely to change over time, due to the macroeconomic influences. Investment managers can expect this to be overlaid with a lot of noise and chaotic market activity.

The asset class differences and geographical distributions enable investors to consider how different portfolio structures would perform under these conditions and to develop strategies for portfolio management that will minimize the losses that might occur. Where there are obvious winners and losers by economic sector, these have been highlighted to provide inputs into optimal hedging strategies and portfolio diversification structures.

This report provides performance projections for a standardized high-quality, fixed income portfolio, under passive management. This is to enable comparisons over time and between scenarios. We also estimate returns for individual asset classes to help investment managers consider how this scenario might impact their particular portfolio and to consider the intervention strategies over time that would mitigate the impact.

Use of scenario by organizations

Many companies use 'what-if' scenarios for understanding and managing risk. This scenario is designed to help organizations improve their operational risk management, and to identify improvements in business practices that increases resilience to shocks of this type in the future.

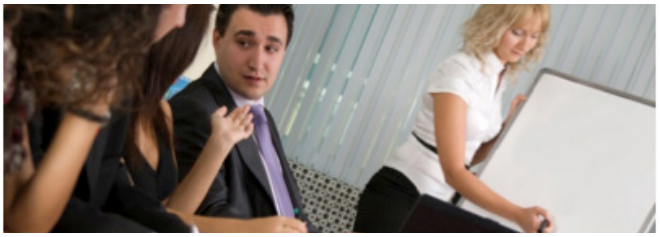
Stress test scenarios to improve risk preparedness have been well studied in management science. Scenarios that are most useful for improving operational risk management are those that are disruptive and challenging, and that force participants to confront a changed reality. It should challenge management assumptions about the status quo. For a scenario to be useful, it also has to be plausible (but not probable), and 'coherent' – i.e. everything in the scenario is consistent and interlinked.

Acceptance of a scenario can be a problem in implementing stress tests. It is natural for managers to challenge the assumptions of the scenario and to question how feasible it is. The actual details and severity metrics for the scenario is less important than the exercise of working through management actions, however this report includes a section explaining how the scenario was selected and the justification for the parameters of the scenario.

The scenario is selected to illustrate the severity of shock that can be expected from this particular threat type (social unrest) with around a 1-in-100 (1%) chance in any given year, so it is extreme but plausible. Our other scenarios are also selected at the same level of (im)probability. It is worth noting that the Centre for Risk Studies taxonomy of shock threats identifies over 50 potential causes of future shocks. Each threat type is capable of providing some level of challenging shock to parts of the world's economy at periodic intervals, so an organization could expect to experience, and manage, one of these shocks every few years.

This scenario is presented as a narrative, with specific metrics of loss, impact, and disruption estimated as indicators of the levels of management challenge that would be faced. We try to make the narrative as realistic as possible, to help managers buy into the fiction for the point of view of exploring their decisions in this hypothetical situation.

Improving an organization's resilience to a crisis requires a number of management elements, for which scenarios can be useful components. A major challenge is improving awareness of the potential for shocks and the expectation of disruption. Expectation of disruption to develop a risk management culture, where expectations of continuity of the status quo are properly challenged, and contingency planning is an evolving process.



The scenario is designed for use by organizations to improve operational risk management

Operational risk management involves a wide range of activities, including procedures and response planning under a wide range of potential conditions, and broader cultural issues such as measures to sustain institutional learning about risk, consideration of succession planning, shared value systems, incentives, reporting, governance, and management monitoring.

This scenario provides inputs into the contingency planning around a situation of exceptionally high absenteeism, disruption to the economy, failures of business counterparties, and disruption to global supply chains. It is intended to help companies improve their resilience to all future crises.

Use of this scenario by policy-makers

International agencies, national governments and local authorities consider scenarios for global and national security, public safety and welfare of the population. Studies of potential catastrophes are produced by agencies such as World Bank, World Health Organization, United Nations, World Economic Forum, OECD, and others to improve the awareness and decision-making ability of policy-makers. This scenario is proposed as an addition to that literature.

National governments create risk analysis frameworks and preparedness scenarios for civil emergencies. Examples include the United Kingdom National Risk Register for Civil Emergencies, and the Australian Government National Risk Assessment Framework. These frameworks commonly include example scenarios as guidance for local authorities in preparedness planning for deployment of emergency services and extreme response needs. In some cases, performance reviews against classified versions of these scenarios are mandatory requirements for regional authorities.

This scenario is a contribution to the design of future versions of these policy-maker scenarios. It offers a view of the economic environment and broader business and social disruption that will be the context for the challenges of ensuring public safety and continuity of public services. It provides inputs into the decision making and resource planning of these authorities, and is offered as context for policy-makers concerned with disaster mitigation in general.

Understanding threats

This scenario explores the consequences of a key emerging threat type – risk of disruptive social unrest – by examining the 1-in-100 severity of a social uprising with a selected example of how that severity could come about. For a truly resilient process, we would need to consider how other types of shocks might occur. It would include different severities and characteristics of other types of social unrest. It would also include an appraisal of other types of threat that could cause shocks.

The Cambridge Risk Framework includes an attempt to categorize the potential threats of social and economic catastrophes, to provide a checklist of different potential causes of future shocks. This has involved a process of reviewing chronological histories for over a thousand years to identify all the different causes of disruptive events, collating other disaster catalogues and categorization structures, and researching scientific conjecture and counter-factual hypotheses, combined with a peer-review process.

Figure 1 provides the resulting Cambridge taxonomy of macro-catastrophe threats that have the potential to cause damage and disruption to social and economic systems in the modern globalized world. The threat taxonomy is hierarchical and categorized by causal similarity. The report Cambridge System Shock Risk Framework: A taxonomy of threats for macro-catastrophe risk management provides a full description of the methodology and taxonomy content.

The taxonomy provides a company with a check-list of potential causes of future shocks. It also provides a framework for collating information about these threats and populating it with more detailed studies of each threat. Threat types of particular interest are profiled with a stress test scenario like the one described in this report.

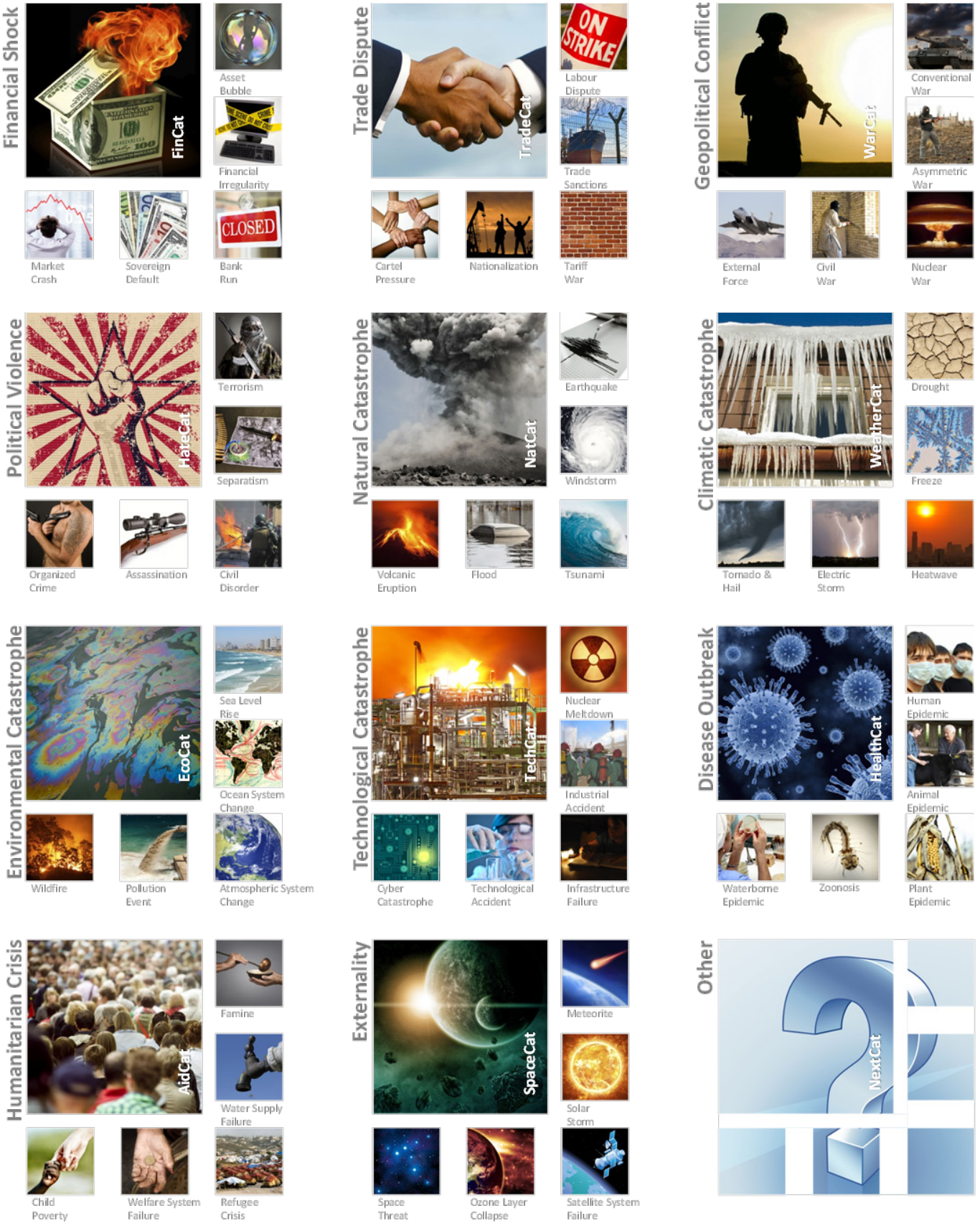


Figure 1: Cambridge Taxonomy of Threats provides a checklist for complex risks of concern to organizations

The taxonomy is being used to map the global landscape of complex risks, and to provide a suite of potential stress test scenarios that inform an organization's ability to withstand the wide range of shocks that it could potentially encounter. It is an aid to improving the resilience of an organization.

Developing a coherent scenario

It is a challenge to develop a scenario that is useful for this wide range of risk management applications. Fully understanding the consequences of a scenario of this type is difficult because of the complexity of the interactions and systems that it will affect. The economic, financial and business systems that we are trying to understand in this process are likely to behave in non-intuitive ways, and to exhibit surprising characteristics. We are trying to obtain insights into this interlinkage through using an extreme scenario.

Systemic instabilities constantly challenge our intuition, with many examples such as crowd behaviour, traffic congestion, financial crashes, power grid failures and others. These are examples of strongly coupled, complex systems that exhibit have unexpected behaviour. In these systems we see patterns such as feedback loops; non-linear amplifications; control interactions; cascade effects; avalanche phenomena; threshold effects and regime shifts; emergent patterns of behaviour; temporary stabilities; and equilibrium states. It is important to identify the potential for these scenarios to trigger these types of cascading consequences which are the main causes of catastrophic loss. These effects are what we mean when we call them complex risks. For stress tests to be useful, they need to be 'coherent' i.e. the described effects are all consistent with each other, follow causal mechanisms and logical consequence, and the correlation patterns of multiple impacts are represented comprehensively. The development of a coherent scenario requires structural modelling – i.e. scientific consideration of the cause and consequence sequence along the chain of cause and effect.

A structural modelling methodology

To develop a coherent stress test we have developed a methodology for understanding the consequences of a scenario, as summarized in Figure 2.

This involves sequential processing of the scenario through several stages and sub-modelling exercises, with iteration processes to align and correct assumptions.

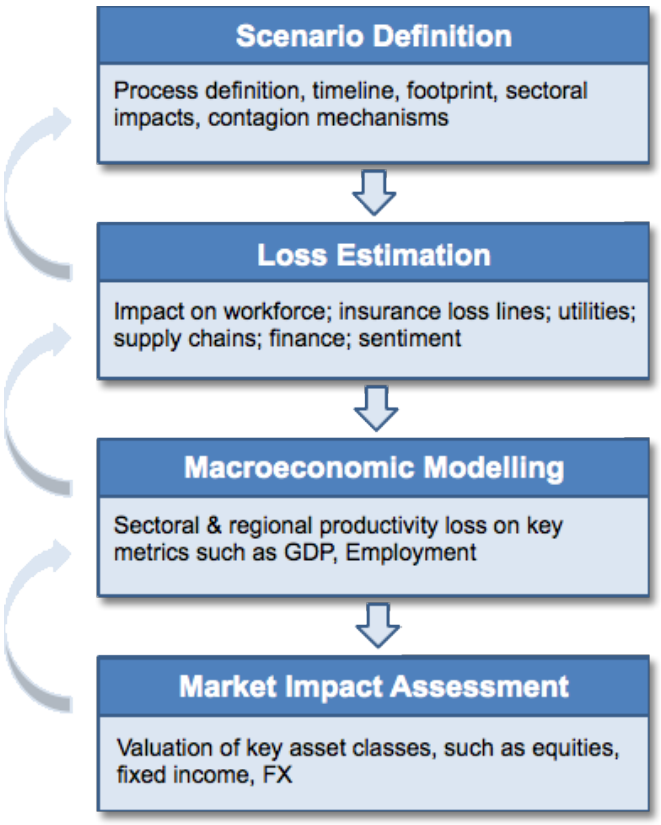


Figure 2: Structural modeling methodology to develop a coherent stress test scenario

The construction of a scenario using structural modelling techniques presents a number of challenges to fulfil the requirements for a coherent stress test.

The first challenge is can we construct an extreme fictional scenario that has never occurred before and make it plausible? We have attempted to do this through using evidence-based precedents, and detailed analysis of how similar events of the past would play out today, under current conditions.

Our second challenge is can these scenarios meet the criteria of being useable by businesses and ultimately adopted for use in risk management? To achieve this we have worked with key users to try to make these scenarios meet their management needs for stress test scenarios, and are actively seeking ways to get the scenario tested further and more broadly adopted.

Other challenges include: can we estimate the losses that would result from extreme events that have not occurred in today's world? We have addressed this through using historical precedents and extrapolation from similar but less severe occurrences to provide an evidence-based approach to estimation.

We believe it is important to create a robust and transparent estimation process, and have tried to

achieve this through detailed process of recorded assumptions made, and sensitivity tests about the relative importance of one input into another.

In the macroeconomic stages of the modelling, we are conscious that we are attempting to push macroeconomic models, calibrated from normal economic behaviour, outside their comfort zone, and to use them in modelling extreme events. We have worked closely with the macroeconomic modellers to understand the useful limits of these models and to identify the boundaries of the models functionality.

A further test comes when we try to model the impact of hypothetical economic extreme conditions on investment asset classes and portfolios. We need to understand the limits of usefulness of assumptions such as asset value 'fundamentals' in investment performance estimation.

Uncertainty and precision

Overall the scenario consequence estimation process is steeped in uncertainty. The process entails making a number of assumptions, which feeds into a set of models to assess loss and direct impact. These are then used as inputs into a macroeconomic modelling exercise, with additional assumptions and the introduction of considerable uncertainties and variation. The outputs of this then feed the assessment of portfolio performance, with additional assumptions and uncertainties.

In all the process is imprecise and one of compounded uncertainty from one stage to the next. The point of producing the scenario however is not about the precision of the consequence estimation. It is to understand the consequences in terms of their holistic effects, their relative severities and the patterns of outcome that occur. Linking all the components into a coherent scenario is difficult to achieve and the process described in this report is one approach that has attempted to do this. It is flawed, and acknowledged as such, but a useful exercise.

The scenario production process, limited as it is, does provide interesting insights, and many of the applications of the scenario are achieved through this imperfect approach. The scenario is offered as a stress test, to challenge assumptions of continuing status quo and to enable companies to benchmark their risk management procedures.

3 Social Unrest as an Emerging Risk

Human history is rife with instances of social unrest, insurgency and rebellion. To a great extent, civil order has always gone hand in hand with an element of civil disorder, and as society expands and develops, so too do the methods and arenas of dissent. At its most extreme, social unrest can cause massive, widespread disruption and both its direct and indirect effects may be felt for a long period following. The decade-long French Revolution (1789-1799), for example, escalated from marketplace food riots to such a seismic upheaval of established ideologies and the socio-political regime that its impact on wider global history remains difficult to accurately quantify to this day.

Historically, the relationship between socio-economic health and the risk of social unrest is a strong one. Wealth disparity, financial crisis and hyperinflation are regularly accompanied by stirrings of civil disorder; mass protest and resistance provide a significant route of public objection in the formation of economic policy and key political decisions.

Group	Agenda	Nature of protest	Type of protest
Anti-War	Moderate	Non-Violent	Anti-Government
Farmers	Moderate	Non-Violent	Anti-Government
Leaderless	Moderate	Non-Violent	Anti-Government
Moderate Political	Moderate	Non-Violent	Anti-Government
Students	Moderate	Non-Violent	Anti-Government
Union Members	Moderate	Non-Violent	Anti-Government
Women	Moderate	Non-Violent	Anti-Government
Environmentalists	Strong	Non-Violent	Anti-Government
Ethnic Groups & Minorities	Strong	Violent	Ethnic, Race, Religion/Sectarian
Sports Fans	Strong	Violent	Other
Urban Lower Classes	Strong	Violent	Urban
Far Left Groups	Strong	Non-Violent	Anti-Government
Anarchist	Extreme	Violent	Anti-Government
Anonymous	Extreme	Non-Violent	Anti-Government
Anti-Capitalist	Extreme	Violent	Anti-Government
Far Right Groups	Extreme	Violent	
Organised Crime Gangs	Extreme	Violent	Ethnic, Race, Religion/Sectarian
Religious Groups	Extreme	Violent	Religious

Table 1: Actors of civil disorder and their features.

The Women's March on Versailles (1789) began as a Parisian bread riot. A day later, they had evicted the royal family from Versailles.

Arab Spring

Social unrest has gained prominence as a risk management issue for businesses with the surprising sequence of civil disorder that moved through parts of the Arab World and became known as the Arab Spring movement. It began with protests about economic opportunity in late 2010 and within months had led to a change of leadership in countries ranging from Tunisia, Egypt, Libya and Yemen, with civil disorder seen many other countries around the Middle East as ideas around potential change were communicated between the populations of neighbouring and similar countries.

Armed uprisings and full civil war were one extreme end of the spectrum of this social unrest. Internet communications played an important role. It was notable that young people were key participants.

Arab Spring of 2010-12 caused a cascade of political regime changes in multiple countries (Photo: Zelnab Mohamed, Flickr)

The outbreak caught a large number of political observers by surprise. Business interests were damaged by many of the outcomes, and there was considerable post-analysis about how to improve the prediction and warning of these socio-political events in the future.

The major element of concern to businesses and to the global economy in general, was the ease and speed with which the movement spread from country to country. Prior to this, social unrest was a sporadic, occasional threat that could occur in one city or country, but this was a new phenomenon: a regional wave of change. Businesses started studying the globe for other potential regions where sudden waves of regime change might trigger similar events in countries with similar cultural values and damage business interests in the same way.

The Occupy movement drew attention to wealth inequality with protests in 950 cities. (Source: ecliptic.ch)

The Occupy movement

Partly inspired by the Arab Spring uprisings, a series of anti-austerity protests began across Europe and the United States in 2011 and 2012 in response to the slow economic recovery after the global financial crisis of 2008, growing economic inequity and instances of corporate malfeasance. These protests gained the name of the 'Occupy' movement following a series of peaceful occupations of major city centres and iconic financial institutions ('Occupy Wall Street', 'Occupy London').

"We are the 99%"

The Occupy protests were about social and political inequality, and used the slogan of "We are the 99%" to highlight the vast imbalance of wealth distribution, where the richest 1% of the population owns a significant proportion of the total wealth, during a period of polarising disparity.[1] Again, many of the participants and activists were disenfranchised young adults. In Spain and Portugal the movement was known as the *indignados,* and had its origins in movements to protest high unemployment, such as *Juventud Sin Futuro* (Youth Without a Future).

The Occupy movement succeeded in coordinating political rallies across many cities and countries. The movement used social media such as Facebook, Twitter, n-1 and Google Drive to great effect to coordinate events world-wide. On 15 October, 2011, Occupy arranged a global protest in which millions of people took part, taking to the streets of 950 cities in a single day.

Social unrest emerging as a systemic risk

What is different and new about the episodes of civil disorder in the early 21st century is their systemic nature and the fact that multiple countries may simultaneously express dissatisfaction and seek significant change. Recent protest movements have occurred in many places at once, amplifying the disruption caused.

This coordination is enabled by uncontrollable social media and new democratized communication – it is now possible for ideas and actions to be spread through the twittersphere and cell phone messaging to bring thousands of people together in coordinated protests. Social unrest is now a systemic threat, capable of destabilizing many countries at once, posing potential threats to entire regions of the world, or demographic segments of the population. This is changing the way that businesses are thinking about their risk of political instability.

Youth unemployment as a key driver

Since the 2007 economic crisis and the advent of the 'Great Recession', record-high rates of unemployment, eviction and income inequality have led to waves of public demonstration and strike action throughout the western world. Accelerated by modern technology, mobile news and new social medias, local social unrest may spread worldwide in a matter of hours and is no longer confined to streets and sit-ins. Large crowds can now gather in the virtual sphere, participating in online protests and carrying out acts of computerised sabotage.

1 The slogan is attributed to remarks by economist Joseph Stiglitz in an article in Vanity Fair in May 2011 "Of the 1%, by the 1%, for the 1%".

Social unrest now exists in a myriad of environments and may appeal to the entirety of the internet, enlisting people across the globe as its intended audience.

Types of social unrest

Social unrest encompasses a broad spectrum of public dissent, ranging from peaceful protest to armed insurrection. Within this broad understanding, stages of escalation can be categorised as follows:

Social unrest describes activities of dissent by sectors of the population to challenge the established authorities. Peaceful methods of protest such as anti-establishment commentary, media campaigns, and petitions often accompany marches, protests, disobedience and non-violent resistance. Social unrest can escalate into *civil disorder*, a law enforcement term to describe activities by a group of people that cross the boundary of illegality (e.g. causing disturbances and damaging property). Groups in this stage lack formal leadership and/or explicit aims or objectives, and violence tends to be spontaneous and short-lived with improvised weapons. The escalation out of civil disorder to a more concentrated or organized violent movement is referred to as *mob rule*, during which law enforcement cannot be maintained and authorities are unable to restore control over a particular geographical area, or for a particular period of time. When a system of leadership starts to emerge within dissenting groups and movements begin to formulate specific aims and objectives, an all-out *rebellion* can ensue. This is the most extreme form of social unrest and involves uprising and/or insurrection with a view to overthrowing the ruling regime. Rebellion that is resisted by the authorities develops into civil war.

	Social Unrest	Civil Disorder	Mob Rule	Rebellion
Examples	Occupy Wall Street campaign US (2012)	London Riots (2011), French Bread Riots (1788)	Paris Riots (2005); Rodney King Riots (1992)	Arab Spring (Libyan & Syrian civil wars); French Revolution
Disruption	Disruptive to local activities. No physical damage.	Property directly targeted, cars damaged, arson	Systematic destruction. Specific groups targeted. Death and injury.	Large scale physical and infrastructural damage. High death toll. Massacres.

Table 2: Aspects of escalating types of unrest.

Structural causes

Relative deprivation is experienced at sub-national level and becomes increasingly pertinent during periods of economic volatility. In recent examples of social unrest (e.g. recent riots in London, Stockholm and Greece), deprivation has been cited as a key driver.

Demographic pressures tend to centre on migration and demographic imbalances. Changing migration patterns increases strains on infrastructure creating social tensions, cultural discrimination and local unrest. For example, riots in France in 2005 are attributed to feelings of economic marginalization by Muslim immigrant populations in French cities.

Large youth populations increase a nation's propensity for social unrest. Communities with more than 20% of individuals (particularly men) between the ages of 15 and 24 are at the greatest risk of frequent and intense political instability.

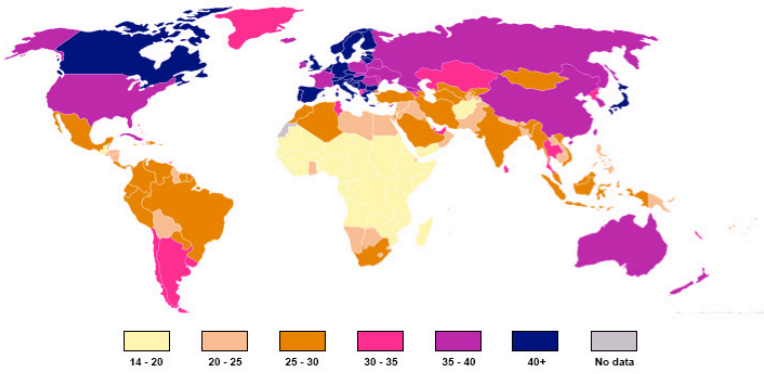


Figure 3: Global Median Age

Proximate causes

Austerity policies, inaugurated by governments, and operationalized in terms of welfare cuts and taxation increases are causally related to civil disorder. Anti-austerity protests were typical of the fiscally tight interwar years but have become commonplace in high-income countries since the 2008 financial crisis and subsequent recession, with the European continent particularly affected.

Racial discrimination is also a common trigger of civil disorder. This discrimination can either be structural, in the cases of employment and access to education, or direct, for example institutional discrimination at state level. Often an expression of such discrimination will spark such civil disorder, for example, the assault of Rodney King by LAPD officers, in the case of the Los Angeles Race Riots in 1992.

Relatedly, *the oppression of civil rights* within

a population can generate unrest amongst persecuted groups and lead to widespread acts of civil disobedience. Authoritarian governments are particularly vulnerable to ground swells of unrest among the disenfranchised, as demonstrated during the Egyptian revolution.

Trigger causes

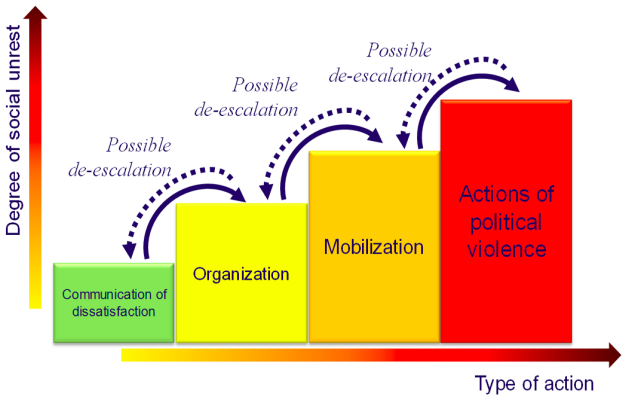
Instances of *police harassment and brutality* have often been a trigger for civil disorder (e.g.: the 2009 Oakland, California shooting of Oscar Grant.) Police brutality may also extend riots and protests, causing them to become more serious and prolonged in nature. Similarly, *political scandals* and *public events* have the potential to trigger periods of social unrest. The 2004 Ukrainian presidential election, disputed on the lines of corruption, led to a period of civil disobedience known as the 'orange revolution', while recent riots following sporting events in North America (e.g.: San Francisco, 2010; Philadelphia, 2008) saw widespread vandalism and public injury.

The breakdown of law and order following *environmental catastrophes* may also produce opportunities for looting and other forms of social unrest. In the wake of notable disasters, such as Hurricane Katrina and the 1992 Cairo earthquake, the immediate deprivation of sections of the population coupled with the perception of an inadequate disaster response may spur period of riot and unrest. Nevertheless, social scientists have found that civil disorder following a catastrophe is actually rare, referring to a post-disaster myth.

Theory

Civil disorder can usually be classified as a social movement and as such it can be seen to follow a rough trajectory through four stages: emergence, coalescence, bureaucratization and disorder. There are a number of important drivers at each stage:

- *Dissatisfaction* (Stage 1): Grievance or trigger
- *Organization* (Stage 2): Coalescence of organizational capacity
- *Mobilization* (Stage 3): Resources and opportunities for mobilising people
- *Violence* (Stage 4): Sufficient frustration to legitimize violence



An explanation of the theory of drivers of increasing social unrest (source: Planet Risk)

Threshold

The 'riot threshold' theory rests on the behavioural economic principle that human beings are rational actors striving for utility maximisation. As such, according to the riot threshold model, different individuals have different 'thresholds' at which point their cost-benefit analysis alters and the individual determines that they have more to gain by joining the riot than by not participating. Such a theory provides an explanation as to how disorder may transition from grievances to actual protest. In large scale civil wars, the last individuals to defect from a collapsing regime are the ones who have the most to gain materially from it; equally, the initial inaugurators or first movers of regime contestation have the least to lose – they are often without jobs, homes and have prison records.

An offshoot of the threshold distribution model is the multiple equilibrium theory, which has been used to explain the sudden crime spike of the London riots of 2005. The multiple equilibrium theory provides an explanation as to how grievances transition into sustained, destructive protests before a robust police response alters the cost-benefit analysis, subsequently restoring a low crime equilibrium.

To understand how disorder develops it is important to grasp the ways in which thresholds may be lowered:

- *Socio-economic inequality*: Low levels of social and economic prospects may encourage participants to join an episode of disorder because of frustration at their situation; they feel they have little "stake in society".
- *Chance of success*: As an episode of disorder continues the likelihood of it failing or succeeding may alter the thresholds for those

Case Study
2005 French Riots

Two weeks of widespread rioting in the Parisian suburbs in October and November 2005 caused more than €200 million worth of property damage.

The accidental deaths of two Muslim teenagers killed while evading a police checkpoint in the suburb of Clichy-sous-Bois triggered two weeks of riots and arson attacks in Paris in late October 2005.

Rioters targeted schools, hospitals, buses and cars, leaving a wake of extensive material destruction that prompted authorities to ban the sale of gasoline in cans, impose civilian curfews, and ultimately declare a state of emergency in the capital. Related activity led to property damage and arson in 300 other French towns, as well as Brussels and Berlin.

Thousands of arrests ensued while the French Federation of Insurance Companies (FFSA) estimated total insurance claims from the riots at €200 million. Contributing financial uncertainty led to a fall in the Euro and instability in the French stock market.

The riots were concentrated in ethnic minority areas with higher-than-average rates of unemployment. Analysts suggest that the greatest contributing factor to the riots sprang from frustration with long-held racial attitudes in French society that have ostracised the descendants of North African immigrants living in ghettoized neighbourhoods, leading to a 60% unemployment rate amongst young Muslim men and wider socio-political marginalisation.

who are not yet engaged. This is a particularly pertinent concern amongst politically driven episodes of disorder.

- *Response of authorities*: Depending on the intensity of the response by authorities, thresholds may be increased or lowered.

Social media

Social media has dramatically altered long-established methods of social movement and mobilisation. Use of social networking sites is low-cost and allows transnational communication. The role of social media has been seen as integral in episodes of disorder, including the Arab Spring, Turkey, the Occupy Movement and the Spanish *indignados* movement. Censoring such websites as a method of quelling civil disorder has previously proved ineffective, as seen during the protests in Turkey in 2013, where blocks to Facebook and Twitter were circumvented using encryption software and 'virtual private networks' (VPNs).

It would appear that social media's value for those engaged in civil disorder lies less with its use as a means to call individuals to action, but more with its facility to transmit information instantaneously and at a low cost. Crucially, social media allows information to be passed beyond a person's social circle, allowing the transmission of information from grassroots level. A study of anti-austerity movements, the ongoing Spanish *indignados*, Greek *aganaktismenoi* (2010-12) and current *Occupy* movements in the US and the UK, which collected posts on the social networking site Twitter – 'tweets' – for a period of two weeks when each movement was at its most active, found that a small number included calls to action, with the transfer of information relating to the cause being the predominant feature.

The study cites theories of information cascades, where individuals make decisions on the basis of their observations of other peoples' actions, rather than their own private knowledge. 'Trending' topics on sites such as Twitter and the 'hashtag' function facilitate such information cascades.

Political opportunity

The political opportunity theory postulates that particular political contexts are critical in determining the formation, growth and outcome of episodes of disorder. These political structures are "consistent — but not necessarily formal or permanent — dimensions of the political

Case Study

Los Indignados – Spain's 'Outraged'

Spain's youth in revolt inspired the 2010 foundation of the Occupy Movement.

By 2010, the youth unemployment rate in Spain was the highest in the European Union; some 44% of young people were unable to find work. In early 2011, a national Facebook and Twitter campaign called on 'the unemployed, poorly paid, the subcontractors, the precarious, young people' in 60 Spanish cities to take to the streets in protest on May 15.

An estimated 120,000 people took part in the peaceful protests. In Madrid, demonstrators staged an open-air sit-in which provoked police violence and led to riots, commercial destruction and minimal arson. In response to the police brutality, a small group occupied La Puerta del Sol; within four days, the crowd had grown to include some 15,000 people calling themselves '*indignados*' (the outraged).

Inspired by the 2010 Arab Spring uprisings, the indignados movement can be described as one of the first in a now long line of active civil protests currently sweeping the west. Despite its beginnings as a youth movement, the indignados phenomena has since become a middle class affair, incorporating whole families, children and retirees across the country. Its goals have diversified since its inception.

As of 2014, the *indignados* demonstrations remain ongoing. To date, estimates suggest more than 8 million Spaniards have participated in linked protests. The campaign, now also known as 15-M after its foundation date, has led to the 2014 foundation of the leftist political party Podemos which won five seats in the most recent European parliamentary elections.

environment that provide incentives for people to undertake collective action by affecting their expectations for success or failure."

There are several factors that represent a "political opportunity" for social and protest movements: increase in political pluralism, decline in repression, power struggles between elites, political instability, and openness to political participation. These features, and their changes over time, shape not only the movements' strategy and likelihood of success, but also the very claims they are advancing. In Europe we currently see how the multileveled decision-making system of the EU has opened new political opportunities for protests to develop. From a causal perspective, the lack of citizens' representation at the EU institutional level, particularly the powerful Commission, has triggered protests all over the continent.

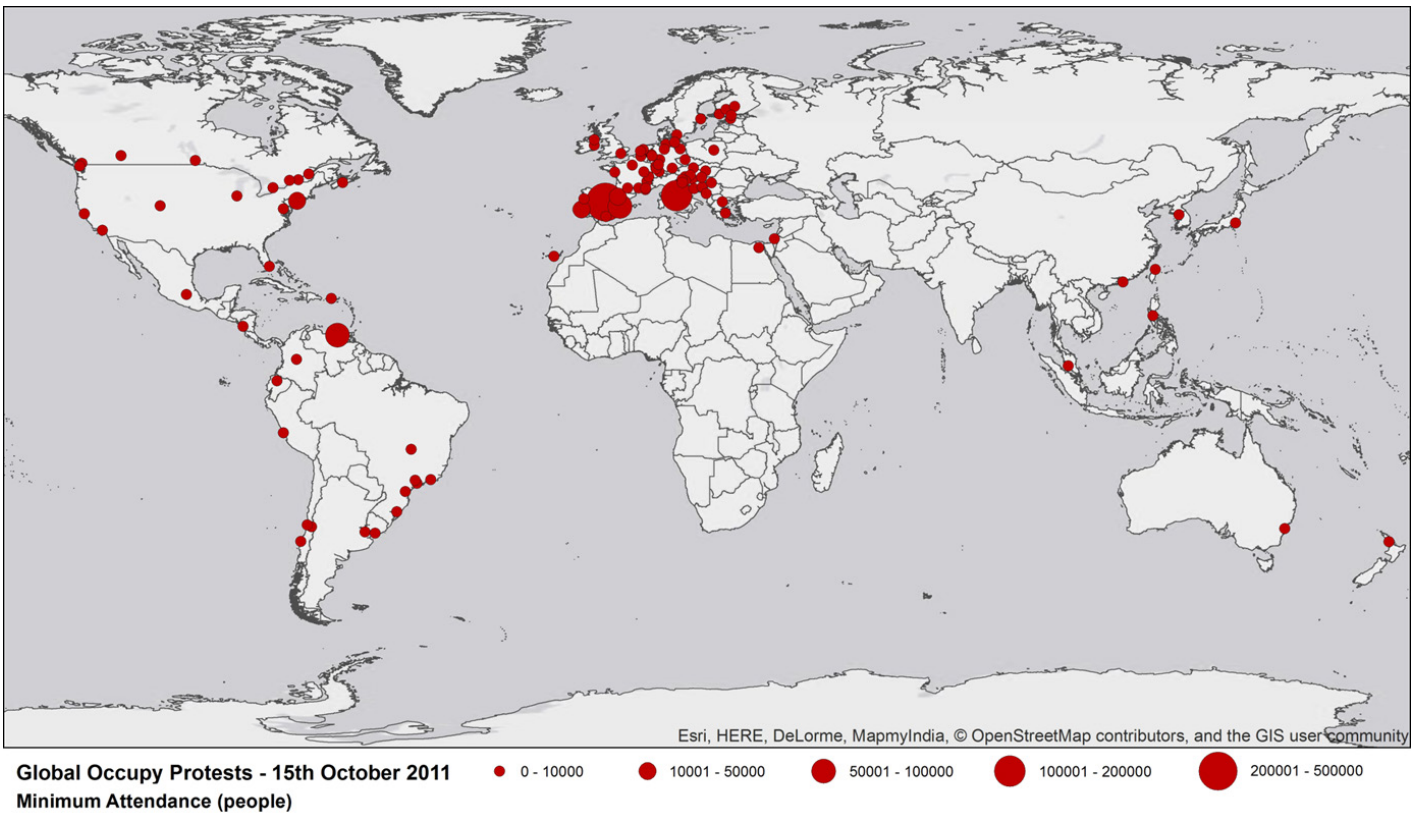


Figure 4: Size and spread of selected 15 October 2011 protests organised by the Occupy Movement, also represented through social media connectivity on the report's back cover

4 Defining the Scenario

There are a wide range of potential scenarios that could be developed to explore the business stresses of social unrest. The most challenging aspect of the modern manifestation of social unrest is its emergent behaviour, arising suddenly from social media activities, and that it can cause widespread and simultaneous disruption in many different locations.

In this scenario we wanted to capture this emergent behaviour and to simulate the sudden rallying of youth anger at key economic sectors.

There are many countries and locations where it could occur. The most challenging locations and the greatest impact is if the social unrest occurs in home markets in the world's strongest economies. For this reason we selected a large-scale coordinated protest movement occurring simultaneous in major cities across Europe and North America.

To be challenging for business managers, it is important that the scenario is more extreme than normal experience. We have set a benchmark of 1% annual probability of exceedance for the severity of the particular threat, i.e. a '1-in-100' event. It is difficult to characterize this with any precision for social unrest, as there is no statistical sample of historical riots of the type we are exploring. Instead we have taken the Occupy Movement case study from 2011 and amplified it, to make it credible but extreme.

The Millennial Generation

We simulate the outbreak of a significant period of social disorder among young, disaffected people across Europe, North America and beyond. We focus on the issue of high unemployment in the latest generation of young graduates around the globe – the so-called 'Millennial' generation, born between 1980 and the early 2000s, popularised by Strauss and Howe in their book *Millennials Rising*. The title for our scenario echoes their book title.

The 'trigger' event we have chosen is an arbitrary one (a bank bail-out) which provides the catalyst for immediate social unrest focused around European and North American commercial centres.

However, like the circumstances of most trigger events themselves, the geographical starting point of the uprising is relatively unimportant. Prevalent social media coverage of the situation in London ignites sentiments among young people worldwide and the uprising quickly develops a global character.

The choice of cities most affected in our scenario is informed by a social unrest threat assessment focused in European and the US economic centres, the results of which are exhibited in Figure 5.

Selection process

The Millennial Uprising Scenario was selected in light of the recent rise in widespread anti-austerity and anti-inequality protests throughout Europe and North America. The fall-out from the 2008-12 international recession has led to an increase in wealth disparity and high levels of unemployment, particularly among young people and graduates. Europe has seen prolonged periods of both peaceful and destructive civil unrest, particularly in Greece, Spain and France, motivated by frustrated, disenfranchised younger generations seeking a better standard of living.

Notable among these efforts are the international Occupy movement and the advent of the Spanish '*indignados*', which both first appeared in 2011. Inspired by the Arab Spring, both groups seek to achieve their aims through peaceful protest, and have established widespread support through the use of social media in spreading messages and news. These movements typify the modern culture of youthful civil unrest: one that utilises multiple forms of media in order to reach a greater audience; that captures international attention; that protests political and economic pains felt worldwide; and provokes similar and ongoing civil disturbances across the world – they provide the key inspiration for the design of our social unrest scenario.

In order to define a '1-in-100' event, we have introduced several significant variables to the Occupy/'*indignados*' model in order to increase the severity and spread of a potential millennial uprising.

A '1-in-100' Event

The scenario we describe is unlikely to occur. In fact, we have chosen a severity of scenario that could only be expected to occur with a change of 1-in-100 in any year. Therefore, there is a 99% probability that a scenario of this severity will not happen in the coming year.

	Level 1: Social Unrest	Level 2: Civil Disorder	Level 3: Mob Rule	Level 4: Rebellion
	Peaceful protest	Unarmed mob violence	Unarmed mob violence with no law enforcement	Armed organized insurrection
Level Description	Demonstrations, sit-ins, non-violent protests	Crosses boundary of illegality: Riots, looting, arson	Systematic destruction aimed at targets of hatred	Civil War, Sectarian Violence
Examples	Peaceful anti-capitalist protests, Occupy Wall Street campaign US (2012)	London Riots (2011), Bombay Riots (1992-3), Bread Riots France (1788)	Paris Riots (2005); Rodney King Riots (1992)	Arab Spring (including civil war in Libya & Syria); French Revolution 1789, France 1848
Drivers	Infringement of civil rights, government policies, economic conditions, unfairness	Economic disparity; unemployment; food price hikes; austerity driven cuts	Racial/ethnic tensions, religious tensions; Lack of food or water	Sectarian violence, elite factionalism, wide scale unrest
Characteristics	Generally peaceful and isolated in character	High potential for contagion and for damage	Law enforcement forced to withdraw. Temporary	Often protracted conflict with the potential to spark regional conflagration
Destructiveness	Disruptive to activities. No physical damage.	Property directly targeted, cars damaged, arson	Systematic looting and destruction. Specific groups being targeted. Death and injury.	Large scale physical and infrastructure damage. High death toll. Massacres.

Table 3: Definitions of levels of social unrest.

The scenario has been developed by reviewing the severity of recent periods of social unrest and then creating a narrative which involves elements of each in order to understand how such a situation may come about and what kind of effect an uprising of such a level would have on an international scale.

To benchmark this stress test scenario to others in the Centre for Risk Studies suite of emerging risk scenarios, we need to assess the severity of a millennial uprising that would occur with about a 1% probability of exceedance somewhere in the world in a given year. In order to grade our scenario, we have constructed a grid of specific forms of social unrest and created a fiction which begins as localised *social unrest*. From there, the Millennial Uprising grows into *civil disorder* on an international scale and begins to cause property damage. In more vulnerable cities, this damage is widespread and rampant and the uprising can no longer be classified as peaceful. Ultimately, part of the movement devolves into *mob rule* as a radical strand of protestors begins to carry out extreme acts of violence in order to achieve their aims. In designing a scenario of this severity, we are able to study an improbable, but not unlikely, period of civil disorder which commands international and economic influence, but does not escalate into all-out war.

Millennial Uprising Scenario stages

Phase 1: Underlying tensions

Youth unemployment has hit a new high in the Eurozone and North America. The disparity between available opportunities for graduates from different universities and degree types creates widespread frustration, hopelessness and anger in the younger demographic.

Phase 2: Trigger

Austerity measures occurring during the government bail-out of a major international bank severely aggravate the situation. Students are the first to protest, quickly followed by striking union workers and other outraged young people. The group begins to mobilise in the capital but are blocked by authorities.

Phase 3: Escalation & disruption

Social media spreads word of the protests and strikes and government reaction. Activists gain international traction and backing. Celebrity and political supporters lend credence to the movement which now calls for a global day of action in 1500

cities. On the day, reports of civil disobedience and non-violent sabotage in these cities are prevalent across Europe and North America.

Phase 4: Violent turn

Violence breaks out amid the protest movement, leading to widespread property damage and injury. Madrid, Athens and London, in particular, are badly affected and scenes of destruction in these cities draw the eye of the global media. Coverage of the violence incites greater, angrier and more destructive chaos elsewhere in the world. Emblems of political and corporate greed, as well as luxury-goods retailers, fall prey to the rioters as the uprising gains a body-count.

Phase 5: Dispersal

Protestors are polarised by the increasingly violent nature of the movement and public support quickly vanishes. The media begins to criticise and shame participants and propagate peaceful, constructive resolution between protestors and politicians.

Phase 6: End

Protestors leave the major cities and the riots come to an end following the creation of new corporate regulations and a political promise to reduce wealth disparity.

Scenario variants

We have introduced a set of variants to the Millennial Uprising scenario in order to gain a better understanding of the greater effects such an event. Scenario 1 (S1) represents a best estimate of what a social unrest scenario like the one we have tested might mean for a particular economy. Variant S2 increases the shocks to employment, consumption, inflation and market confidence by 20%. These first two scenarios include calculated reactions from most of Europe, as well as Canada and the US. The variant X1 applies the same shocks, increased by 50%, which provokes social unrest outbreaks in the countries of Brazil, India, Russia and South Africa.

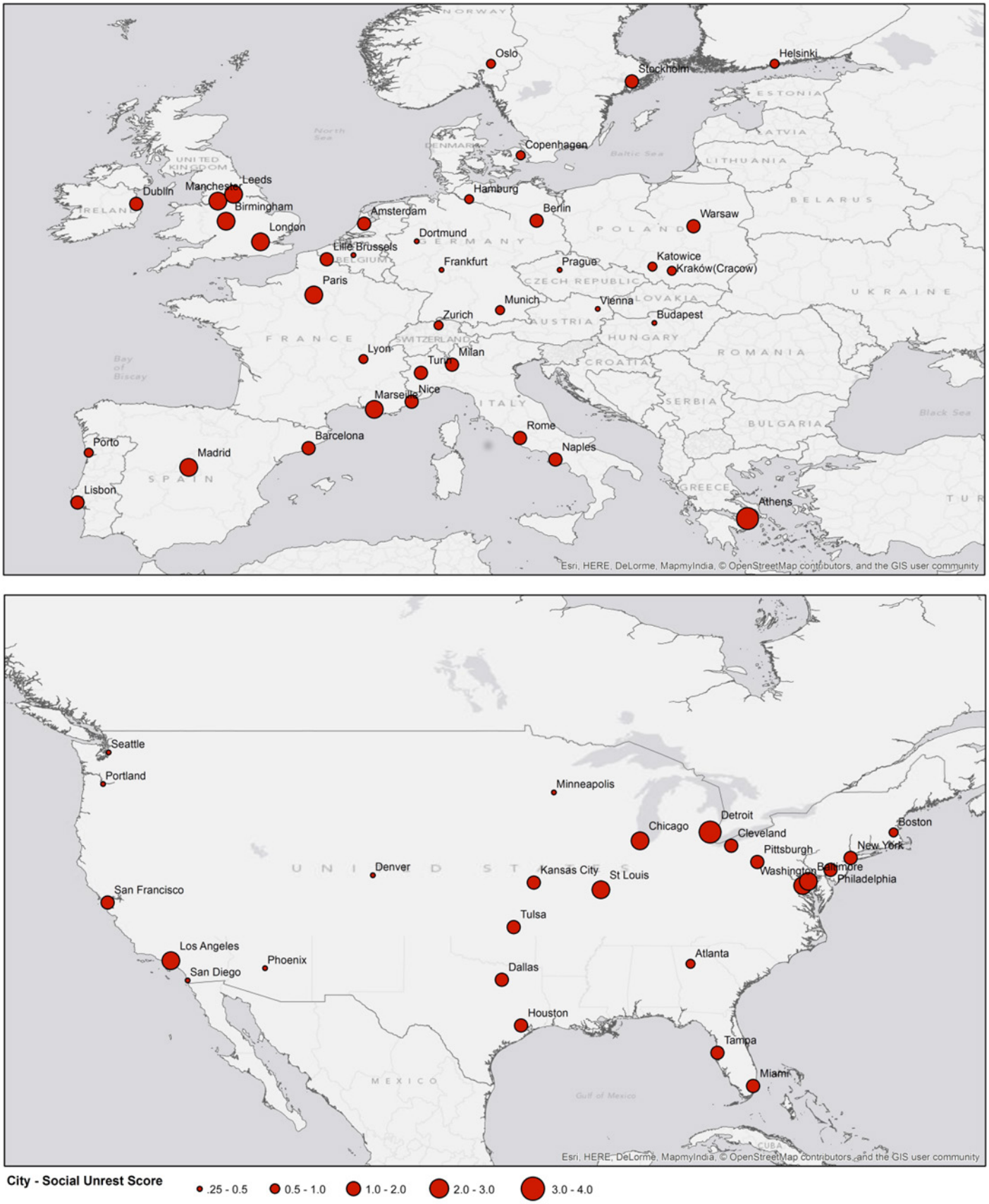


Figure 5: Social unrest threat assessment in European and US cities

5 The Scenario

Context

Wealth disparity is increasing, as is society's willingness and capacity to engage in protests. Tensions have been growing steadily as young, educated people struggle to find jobs, and face few prospects. Workforces are steadily reducing and the likelihood of gaining employment is beyond the reach of those from outside the circle of elite private schools and top-tier universities. Even successful graduates struggle to find more than temporary employment as the average applicant to job ratio surpasses 100:1.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Millennials are 'first generation poorer than their parents'

New graduates will have lowest work prospects in British history

Wednesday, November 2

London, UK (1049 GMT) -
Official studies have shown that greater numbers of university graduates are competing for low-skill, non-specialised jobs as youth unemployment rates rise.

A new study published by the Department for Work and Pensions has shown that the proportion of degree-holders who were jobless one year after graduation jumped again

Increasing numbers of graduates are turning to temporary employment services to gain work experience

Phase 1: Underlying tensions

Despite a period of prolonged economic growth and increasing corporate profits, youth unemployment remains a problem throughout Europe and the United States. Globalised markets along with improvements in the communications infrastructure in China and India have increased the number of service level jobs in those economies and diminished those required in the West.

Recent student surveys suggest graduate prospects are at all-time low, with low prospects of getting a career-based job after graduation. Competition for places has become so fierce that many starting salaries at blue chip organisations amounts to less than minimum wage, when considering the 12-14 hour days expected of new hires.

Phase 2: Trigger

Bad debts, risky investments, and a slew of corruption allegations force a major international bank to seek a government bailout. As a systemically important institution, the government has little choice but to invest billions of taxpayers' money into the bank.

The chief executive's bonus for the year's final quarter provokes widespread public outrage. Austerity measures are put in place "to protect society", accompanied with an announcement that corporate taxes will be decreased in order to encourage increased investment in the City and help the country "to rebound as quickly as possible".

Another Spanish institution has precipitated the fall, announcing its own solvency crisis days earlier, prompting widespread protests in Spain.

A shockwave runs through the UK student population, followed by local outcry and solidarity demonstrations.

Plans for a mass march through the City to Westminster begin to emerge. Following on from the youth initiative, major unions announce a national walk out following the refusal to meet increased wage demands. 250,000 people descend on London but are prevented from accessing the City or the financial district.

The peaceful protests dissipate quickly but with a promise to return in greater numbers and to march through the City and financial district.


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#MillennialMarch – social media reacts

Thousands tweet support for London protests

Thursday, February 12

London, UK (1455 GMT) -
The failed London City protests of more than 250,000 students and union members has garnered traction and fans worldwide

The tag #MillennialMarch appeared on social media top tracking lists around the world yesterday after news broke that a peaceful march led by British students was blocked from entering the city's financial centre. More than 250,000 individuals marched in protest

There has been worldwide outrage on social media after non-violent protests were pushed back by City police

News of the protests and their subsequent repression unleashes a wave of support on Twitter, Facebook and Tumblr, capturing the attention of young people around the world.

The hashtag #MillennialMarch goes global, prompting young people to join an international movement in protest against government hypocrisy and the "global corporate parasite".

Phase 3: Escalation & disruption

Leaders emerge from within the movement and across the world a cadre of musicians, scholars and politicians use social and conventional media to organize the "billion citizen march"— a march for ordinary people to stand up to the corporations who dictate the extent of their life's prosperity. The cry goes out for multiple cities worldwide to spring into action on the same day.


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Students vs. the world – cities in Europe, US see mass protests, online hacktivism

Response to the 'billion citizen march' rally seen in 1500 cities

Friday, March 30

New York, NY (2251 GMT – 1751 EST) - **Widespread response to the online 'billion citizen march' campaign saw protests and public demonstrations in 1500 cities worldwide today, couple will rolling 'denial of service' attacks online.**

The recent 'billion citizen' dream came close to realisation today as young and disenfranchised people took to the streets and the town centres to voice

Hundreds of arrests were made in cities across the US; police were called into action in Madrid, Athens and Detroit

On this single day, acts of protest are recorded in more than 1500 cities throughout Europe and the US. This protest takes three forms: the rallies; the non-compliance movement; and the online blackout.

The non-compliance part of the protests calls on those unable to travel to the major cities to protest through inactivity, to stay home from work, to stay away from shops, to not use petrol stations, etc. The final part, the blackout, is coordinated through the hacker group *Anonymous*. Hacktivists override the bandwidth of more than 250,000 websites causing them to shut down. Mass emails and phone calls bombard government officials. Huge amounts of money transfers and cash withdrawals are encouraged, and the corporate websites of the world's largest 1000 companies are targeted with 'denial of service' attacks.

The protests are peaceful at first, although pockets of violence break out in fragile areas, with Athens and Madrid particularly badly affected. Similarly, instances of police violence and brutality are publicized globally, enraging protestors and sparking further violent turns.

Phase 4: Violent turn

The violence becomes more organized as two distinct waves of protestors emerge. The first group calls for peaceful marches concentrating on disruption, blocking major transportation hubs and disengaging from economic activity. A secondary group, led by more fervent activists, demands more physical justice, arguing that loss should be met with loss—protestors smash windows, vandalize corporate and government emblems, and set cars and buildings ablaze.

In particular, rioters target high-value commercial outlets, stealing computers, televisions, mobile phones and jewellery. London suffers significant damages, with a major bank's HQ burned beyond repair.

In other cities, like Paris, Detroit, Athens and Madrid, the violence is more widespread, rife with police confrontation, looting practices, manslaughter and outright killing.

While many of the peaceful protestors oppose the violence, the cost of joining the violence becomes low enough that many join in with the mob mentality over a fractious period of days and weeks.


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BREAKING NEWS **Bank set alight in London riots**

At least five people are dead after widespread arson attacks

Thursday, April 8

Madrid, Spain (2046 GMT – 2146 CET) – **Police are on high alert in Europe's cities tonight as petrol bombs set a London high-rise on fire.**

There is thick black smoke hanging over Southern England today following the torching of an international bank HQ. Sixteen police officers were taken in to hospital, suffering smoke inhalation and severe burns. The government has issued an official warning, urging people to stay off the

Rioters have already turned to social media, calling for similar attacks in financial centres on both sides of the Atlantic

Phase 5: Dispersal

The tone of the protests changes; the peaceful protestors fear the practices of their violent counter-parts and seek to distance themselves. As a consequence the numbers involved rapidly reduce though the level of violence increases.

The reduction, however, allows the police to control the protests and to direct them away from critical city areas. The press too begins to switch their coverage, criticizing the protestors for hurting ordinary people and prolonging the chaos.

During the dispersal process, leaders of the peaceful protests engage in dialogue with political leaders, acting as mediators with the more extreme flanks of the movement.

Phase 6: End

The final protestors leave London and New York as politicians announce changes to corporate and banking regulations as well as a series of job-creation initiatives and corporate-run social programs aimed at reducing the economic disparity that has emerged.


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‘Best foot forward’ – protest leaders meet with EU council in Brussels

Occupying groups leave the city centres as opposing sides seek diplomatic solutions

Saturday, May 15

Brussels (1114 GMT – 1214 CET) - **Protest leaders today are in congress with European representatives to seek compromise on austerity measures following the April riots**

Seven months of protests comes to a tenuous end today as the principle moderators of the Millennial March and subsequent international disobedience

Similar meetings are set to take place in the US and outside of the EU later this week.

6 Loss and Direct Impacts

In the Millennial Uprising scenario we assume that damage patterns will follow those of similar periods of social unrest in the past but we assume to a more extensive level.

Direct damage can be triggered in a number of ways during episodes of social unrest but, most commonly, it is caused by looting and arson.

Looting

In general, looting is carried out in stores with street-front displays in downtown areas, or with major shop-window exhibits, or high visibility inside the zone of civil disorder. More specifically, those outlets that are particularly at risk are:

- Retail outlets for general products needed by refugees in a post-disaster environment (supermarkets, grocery and food stores, drug stores, clothing, shoes, gas stations)
- Retail outlets for luxury, high-value or non-essential products (shopping malls, electronics, liquor and jewelry stores).
- Office and service buildings, warehouses, storage facilities, restaurants.

In the Millennial Uprising scenario, we assume that looting damage is severe throughout the centres of the affected cities.

Types of premises	Numbers	Percentage
Retail (Total)	1,385	61
Electrical	265	12
Clothing	233	10
Small independent retailers	213	9
Supermarkets	181	8
Jewellers	93	4
Other retail	400	18
Services (Total)	893	39
Restaurants and cafes	219	10
Financial	101	4
Gambling	152	7
Public house	61	3
Hair and beauty salon	65	3
Service station	42	2
Other business premises	253	11
Total	2,278	

Table 4: Recorded crimes during the 2011 UK Riots

A 2012 general strike in Spain saw barricades of burning tyres in cities across the country (Photo: Montecruz Foto, Flickr)

Arson

Arson is a more destructive variant of looting, involving setting fire to both buildings and cars – causing spectacle and focus for the civil disorder. Images of arson and car burning often become a focal point in the media's depiction of major instances of social unrest.

Car burning

Cars are often attacked as they are relatively easy targets to destroy. During the Stockholm riots in 2013, 100 cars were burned in one night in the suburb of Husby, while in the 2005 French riots, some 10,000 cars were damaged, over 6,000 of them set alight. Burning cars can often be used as barricades and roadblocks.

In the scenario, we assume extensive car burning takes place throughout the affected cities.

Buildings set on fire

Destruction to buildings is a common expression of a mob's anger. Breaking windows is a common low-intensity expression of destructive will, while setting a building on fire is a more extreme form of expression. In the 1992 LA Race Riots, 377 buildings were completely destroyed across six days of rioting. Most of these were commercial businesses.

Buildings that are targeted in arson attacks tend to be:

- Symbols of authority (police stations, court-houses, federal or local administrative buildings). For example, during recent unrest in Greece, administrative offices in the Eastern Macedonia and Thrace were attacked with Molotov cocktails.
- Symbols of government services (schools, hospitals, fire stations, administrative offices) - during the 2005 Parisian riots, schools in the neighbourhood of Grigny were targeted.
- Commercial businesses, particularly those owned by a mob's targeted racial/ethnic demographic, representative of wealth, or symbols of unequal commercial opportunity. The London Riots, driven by feelings of inequality, made targets of over 8,000 shops, restaurants and pubs. During the 1992 LA Riots, numerous Korean-owned shops were targeted, due to rising tensions surrounding the influx of Korean-Americans to the area.
- Homes owned by different races/ethnicities targeted by the mob. Studies have shown that arsonists consistently targeted non-indigenous ethnic groups during the unrest that followed the 2007 disputed election in Kenya, and, during the 2012 Rakhine State riots in Myanmar, Muslim households were the main target of arson attacks.

In the scenario, we assume that the anger is focused on financial institutions and that periods of mob rule occur in the financial districts of the affected cities, during which the police authorities are unable to retain control. Staff of the businesses in the central business districts flee, leaving the buildings undefended. The mobs set fire to multiple office buildings housing financial institutions. The fire services are unable to gain access to suppress the fires, and the images of burning skyscrapers become the icon of the Millennial Uprising used by the media. Many commercial properties are also badly damaged by fire.

Loss of life

Episodes of disorder have – very occasionally – resulted in a large number of fatalities: the U.S. Race Sectarian riots of the late 19th and early 20th centuries sometimes developed into near-wars between crowds of opposing races, including reports of mass casualty attacks, for example in the Tulsa City Oklahoma riot of 1921 in which there were even reports of private airplanes dropping homemade bombs on fleeing crowds.

Sectarianism leads to high casualties

Civil disorder that escalates into more protracted unrest, especially during revolution and civil war, carries with it the potential for a high number of casualties. The Egyptian Revolution of 2011 led to 846 casualties, while Syria's descent into civil war has seen 100,000 casualties (at the latest estimate) and remains ongoing.

However, medium-level civil disorder is not directly focused on mass murder and, compared with the more advanced unrest that often occurs in war zones, death tolls in civil disturbance tend to be moderate.

Injuries more than deaths

Generally, social disorder results in a much higher quantity of bodily injuries; these cases tend to number in the thousands during widespread and prolonged episodes of civil unrest. The injuries are generally minor: cuts, bruises, beatings and blunt traumas resulting from being hit by projectiles, and are incurred by both civilians and authorities.

We assume that some unlucky employees of financial institutions in our scenario are caught by the mob and they are injured. A few are killed. These incidents are, however, rare.

Civil disorder is often uncontrolled and accidental deaths and injuries can result from being caught in crowd stampedes or from being trapped in burning or hazardous environments. Crowd action in hazardous and fearful conditions has contributed to high death tolls. For example, 363 people died in Saudi Arabia in a crowd panic during a haj in January 2006 and nearly 650 people died in a stampede, panicked by rumours of a suicide bomber, on a bridge across the Tigris River in Baghdad, Iraq, in August 2005. When disorders occur in confined spaces such as stadiums or squares, there are many incidents of crowd stampedes causing mass casualties, the worst being in 1989 when 93 people died in a crowd stampede in the poorly controlled Hillsborough soccer stadium in Sheffield, UK. The potential for a high casualty incident in a civil disorder resulting from a crowd stampede, particularly in a confined space (like a refugee centre or sports arenas) should not be underestimated.

Insurance losses

The direct short term damage of social unrest has ramifications for insurance losses.

Property losses are significant

Looting and arson triggers significant property insurance claims. Insurers will rely heavily on policy exclusion clauses to reduce financial loss incurred through criminal activity. In contrast, life and health insurance claims are likely to be much lower; most riot casualties are rioters themselves who often have low insurance coverage.

Workers compensation

Additionally, there are likely to be workers compensation losses resulting mob-inflicted injury to employees in their workplaces. Workers are potentially at risk if their building is attacked, but injuries to working people are most likely in those are deployed because of the civil disorder, only to then become the focus of mob anger – such as police, firemen, emergency workers, and government officials.

Similarly, workers traveling in the course of their job could be accidentally caught in the disorder: lorry drivers, deliverymen, business travellers, and others. In general, however, workers compensation losses are likely to be low, but could, under rare circumstances, escalate to be significant.

Indirect loss

The social unrest is likely to result in significant disruption to productive business activities resulting in a subsequent fall in the productivity of labour and capital and a large drop in tourism revenues.

Generally, during episodes of civil disorder a 'no-go zone' is created, and businesses within this vicinity are often reluctant to continue commercial activity. Thus, business interruption claims may be made from undamaged businesses that would otherwise be functioning were it not for fear of injury or damage and difficulty of access.

Broadly speaking, either commercial and private property or government property is targeted during protests and riots. This can result in dramatic variation in the business interruption costs incurred through civil disorder.

Case Study

The Occupy London Movement

The Occupy London encampment on the steps of St Paul's Cathedral.

Begun in reaction to numerous reports of corporate corruption in the American financial services industry and wide income disparity across the US, the Occupy movement has spread worldwide since its emergence in 2011. The Occupy movement has been almost completely peaceful in nature and in most instances has sought to build a working rapport with local stakeholders and commercial interests in proximity to their encampments.

The negative impacts of the Occupy movement seem to stem largely from their disruption to normal foot traffic, and the fact that they may dissuade customers from frequenting nearby businesses.

The Occupy London demonstrators set up around St Paul's Cathedral between 2011 and 2012 passively contributed to a steep decline in visitors to the church, leading to a loss of £16,000 per day in revenue and donations. Over the eight month period of occupation, these daily losses led to an estimated £3.9 million deficit in the Cathedral's regular earnings.

The City of London meanwhile spend £1.06 million on security during the protest, including £525,257 moving police officers from other duties and £386,434 on other expenses, such as overtime payment.

For example, the London riots of 2011 were markedly targeted at commercial interests, specifically retail and manufacturing. Figures from a poll carried out by the British Retail Consortium suggest that British retailers lost upward of 30,000 hours due to the riots - the equivalent of 1,250 days. This contrasts with the targets of violent protest in Stockholm in early 2013 where the media noted the lack of damage to retailers, with a greater focus on municipal buildings and cars.

No official exclusion zone

Unlike other natural disasters or scene of crime there may be no official civil exclusion zone where police lines seal off an area, so insurance companies may have some discretion about business interruption claims arising from civil disorder. In many cases, the civil disorder activity could be spread diffusely across an entire city, and the threat and fear of disorder could cause large numbers of businesses to close temporarily. For example during the London riots many shops pre-emptively closed to avoid attack, even before unrest had spread to that part of the city.

Fluid area of civil disorder

Official policy with a civil disorder is usually containment – for example, the LAPD has a long-establish tactic for encountering civil unrest, which requires a full-force response in the critical opening-hours of a riot. A large presence of police officers surrounds the crowd (allowing an escape gap for the crowd to disperse peacefully) in order to contain the violence within a distinct geographical area and to prevent it spreading further afield. Crowd control, however, is a fluid process, with field commanders changing police positions and dynamically interacting with riot update reports. The total zone over which the police and crowd interact could be fairly large, or subject to change over several days, and police are likely to err on the side of caution by encompassing more city space than just the riot zone, making the civil exclusion zone larger than the area being physically attacked. In low intensity actions, there may be no distinct geographical focus to the civil disorder – looting could occur over a wide area of a city and arson attacks could be sporadic.

Duration of civil disorder

Police containment policy is usually one of patience and allowing the crowd's anger to subside naturally, rather than pursuing confrontation. This means that the duration of civil disturbance could be prolonged. However, this is tempered somewhat by the regime type. More autocratic states are more likely to take a hard line in stamping down on dissent, often through brutality. Generally, in most of the recorded precedents, the period of civil disorder peaks over a period of several days. However, there have been several cases of recurrent violent episodes lasting a longer period of time, e.g. riots occurring every night for several weeks.

Corporate Operational Risk Assessment

Pomegranate Inc., is a fictional company used to illustrate the possible effects of scenarios on a corporation. Pomegranate is assumed to be a consumer electronics company, the 9th largest international player in the highly competitive computer hardware market. It has 100,000 employees worldwide, with headquarters in California, USA, and operates in 75 countries, deriving three quarters of its sales from the main markets of the US, Japan, Europe and China. It sells computers and associated products which it assembles in China, from components and manufacturing suppliers in 20 different countries. It produces over 10 million laptops & tablet units a year. Its new flagship product range is the *Pomegranate Persephone 5G* tablet computer, currently being launched into a highly competitive consumer market and fighting for market share.

In the Millennial Uprising Scenario Pomegranate is a target of disaffection largely via its retail operations:

- The phrase 'global corporate parasite' is applied Pomegranate, tweeted and retweeted as 'Pomecite'. The claim is that Pomegranate's business model is to disenfranchise workers in China by selling their production at high margins in the established economies.
- Sales of Pomegranate products plummet as consumers are affected by the *Don't Buy from the Global Pomecite* campaign.
- Pomegranate's retail outlets in major cities in Europe and North America suffer from picketing, barricades and, in several cases, looting and arson.
- Its retail employees are targeted, resulting in staff shortages as employees opt to stay at home. Some workers sustain emotional and even physical harm from protest action at or near retail premises.
- Sales of all Pomegranate products, in particular its new flagship product, the *Persephone* tablet, are hit as upscale retail districts are targeted by protests and web-based sales systems suffer from denial-of-service attacks. In one quarter, sales of the *Persephone* are 40% below the marketing forecast.
- There are disruptions to Pomegranate's supply chain through demonstrations that paralyse shipping hubs in European cities.

Pomegranate shares lose 5% in value, sustained over 12 months.

Class	Line of Business	
Property		
	Personal Lines/Homeowner	1
	Personal Contents	1
	Commercial Combined	5
	Construction & Engineering	3
	Commercial Facultative	4
	Binding Authorities	2
Casualty		
	Workers Compensation	4
	Directors & Officers	4
	Financial Lines	5
	General Liability	3
	Healthcare Liability	3
	Professional Lines	2
	Professional Liability	3
Auto		
	Personal Lines	5
	Commercial & Fleet	5
Marine & Specie		
	Cargo	0
	Marine Hull	0
	Marine Liability	0
	Specie	0
Aerospace		
	Airline	1
	Airport	0
	Aviation Products	0
	General Aviation	0
	Space	0
Energy		
	Downstream	1
	Energy Liability	0
	Onshore Energy & Power	0
	Upstream	1
Specialty		
	Accident & Health	2
	Aquaculture Insurance	0
	Contingency – Film & Event	3
	Equine Insurance	0
	Excess & Surplus	0
	Life Insurance	4
	Livestock	0

Class	Line of Business	
Life & Health		
	Life Insurance	4
	Health Insurance	4
	Income Protection	3
	Death & Disability	5
	Hospital Cover	5
Pension and Annuities		
	Standard Annuities	-2
	Variable Annuities	-1
	Enhanced Annuities	-2
	Life Settlements	-1
War & Political Risk		
	Kidnap & Ransom	0
	Political Risk	5
	Political Violence & Terrorism	3
	Product Recall	0
	Trade Credit	4
Agriculture		
	Multi-peril Crop	1
	Crop Hail	0
	Livestock	0
	Forestry	0
	Agriculture	0

Key to change in insurance claims	
Major decrease in claims	-5
	-4
	-3
	-2
	-1
No change in claims	0
	1
	2
	3
	4
Major increase in claims	5

Table 5: Estimated impact of a social unrest scenario on claims patterns from different lines of insurance.

7 Macroeconomic Consequences

Social unrest and civil disorder can have serious economic consequences. It may cause supply side shocks to economic output through labour shortages in the workforce and demand shocks by depressing consumption through decreased market confidence and increased uncertainty. Increased social tension and threat of violence decreases overall consumption and has impacts on tourism and trade. Foreign direct investment and country level credit ratings are also impacted. Governments may also increase expenditure on police and other operations to minimize the economic, social and political impacts from protests.

Macroeconomic effects of social unrest

Many studies attempt to estimate the economic impacts of social unrest across a wide variety of characteristics, severities and methodologies for the types of costs and economic loss being considered.

The overall macroeconomic effects of a pandemic can be summarized as:

- Labour supply is reduced as people abandon posts and participate in protests. The labour participation rate is a major variable in estimating economic output on the supply side of the economy.
- Unemployment is the difference between labour supply and the level of employment. Some people will be laid off as a consequence of social unrest putting further pressure on incomes and therefore economic output.
- The demand for goods and services is reduced as a result of fear of leaving the home. Discretionary consumption is most strongly affected, but final consumption is reduced across the whole economy.
- Some demand is deferred and boosts the recovery after the social unrest has subsided.
- There are strong sectoral differences in economic impact, with tourism, travel, and hospitality being strongly affected.
- Impact is highly variable across the country with city centres being the hardest hit. High street shops in main town centres will be most affected through vandalism, theft and loss in foot traffic. This may lead to bankruptcy for some high street shops with significant costs accruing to the insurance industry.
- Government expenditure increases on policing to counter popular social unrest movements.
- There is a global economic re-evaluation of country level risk, with risk levels rising in countries with a history of social unrest and higher youth unemployment.
- Foreign direct investment drops and financial capital is taken out of countries with high social instability.
- Currencies, sovereign debts, and interest rates are all subsequently affected.

Here, we attempt to take a holistic view of the impact of this social unrest scenario and its variants across the global economy.

Macroeconomic model types

Macroeconomists take an eclectic approach to modelling that can be separated broadly into six major categories, as described below. The most widely used macroeconomic models are commonly described as computable general equilibrium models (CGE).

Visual models are simple graphical representations of how an economy should behave under a strict set of pre-determined assumptions (e.g. supply and demand curves). They are simple to interpret and understand but are limited in ability to capture the interaction of complex economic phenomenon.

Mathematical models are formal and abstract, and solve simultaneous equations derived using basic theoretical assumptions about how an economy should behave (but necessarily not how it actually does behave). For example a simple mathematical model may include a supply function explaining the behaviour of producers, a demand function for the behaviour of purchasers, and specify how the model equilibrium conditions will be satisfied.

Econometric models use observed data to measure economic phenomena. Historical data are collected and relationships between different macroeconomic variables determined statistically. Equations are derived that explain and forecast how different variables in the economy might behave. Econometric models allow estimations of future performance and relative uncertainty, however as they are defined by historical data, future estimates are projections of the past.

Economic Impact Case Study
UK Fuel Strikes, 2000-2012

Panic buying at the threat of fuel strikes has caused more disruption than strike action itself.

Sparked by rapidly rising fuel taxes in the UK, protestors blockaded petrol stations and disrupted British fuel supplies in September, 2000. The disorder caused a short-lived fuel crisis; train journeys and post deliveries were cancelled and fuel stations, schools and supermarkets were forced to close, leading to panic buying. Public support for the protests dropped significantly over a short period of days and demonstrators were forced to abandon their efforts without affecting any policy change. The Chamber of Commerce reported a daily loss of £250 million in business revenues as a result of the week-long protests.

A new increase in petrol prices in 2005 in the wake of Hurricane Katrina led to reports of another fuel blockade. Reports of panic buying of petrol, related traffic congestion and supply shortages soon followed, driven purely by the threat of obstruction. Few protests actually took place and very little disruption was ultimately reported.

Similar events occurred again in 2007, when new protests were planned, and in March 2012, when the threat of strike action by unionised tanker drivers, protesting pension cuts and poor safety standards, led to panic buying across the country. The high demand for petrol over a short period of time caused traffic disruptions and forced many stations to close as they sold out of fuel. The self-inflicted UK petrol shortages impacted badly on some businesses which were forced to cancel deliveries and minimise commercial travel.

Computerised simulation models are the most advanced and widely used of all macroeconomic models, combining features of both mathematical and empirical models with Monte-Carlo simulation to perform sensitivity and uncertainty analysis. Models are usually used either for optimisation or projection, and can be static or dynamic. Dynamic models incorporate business cycles and other changes to the economy over time.

Computable General Equilibrium models (CGE) make use of the observation that the supply and demand for goods and services, and other factors of production in the economy, tend to be balanced – to be in 'equilibrium'. These models combine economic theory and empirical evidence to trace changes in economic indicators throughout time. They are typically used for comparing a policy intervention against the baseline. An advancement of CGE models is the Dynamic Stochastic General Equilibrium Model (DSGE), which introduces a probabilistic framework into forecasts and considers a distribution of future random shocks.

Macroeconomic models are useful in bringing order and structure to complex phenomena, and to explore the 'what-ifs' of economic consequences. However, while they provide guidance and insight, their outputs must be used appropriately and treated with caution and scepticism. Each type of economic model was developed for a specific purpose and is only as good as its assumption sets. Real economic behaviour is complex and the simplifications that result from a modelled view can only provide indications of comparative directionality.

Oxford Economics Global Economic Model

The model used in this analysis, the Oxford Economics Global Economic Model (GEM), is the most widely used international macroeconomic model with clients including the IMF and World Bank. This is a CGE model that provides multivariate forecasts for the most important 47 economies of the world with headline information on a further 34 economies. Forecasts are updated each month for 5-year, 10-year and 25-year projections.

The GEM is best described as an eclectic model, adopting Keynesian principles in the short run and a monetarist viewpoint in the long run. In the short run output is determined by the demand side of the economy, and in the long term, output and employment are determined by supply side factors. The Cobb-Douglas production function links the economy's capacity (potential output) to the labour supply, capital stock and total factor productivity.

Variable		S1				S2	X1
		Yr1 Q1	Yr1 Q2	Yr1 Q3	Yr1 Q4	-	-
Labour supply	Peak	-2.5%	-4.0%	-5.0%	-5.5%	+20%	+50%
Consumption	Peak	-1.0%	-2.0%	-1.50%	-1.0%	+20%	+50%
Inflation (CPI)	Peak	-	+1.0%	+2.0%	+1.0%	+20%	+50%
Confidence	Peak	-	-5%	-7.5%	-10%	+20%	+50%

Table 6: Macroeconomic variables inputs into the modelling of Millennial Uprising Scenario

Country	Unemployment Rate	Gini Coefficient	Country Level Shock
SWEDEN	8.1%	0.26	0.58
BELGIUM	8.5%	0.26	0.71
DENMARK	7.0%	0.25	0.36
NETH	7.3%	0.29	0.36
GREECE	27.5%	0.31	1.54
ITALY	13.0%	0.34	1.08
SPAIN	25.6%	0.32	1.76
GERMANY	5.1%	0.30	0.36
FRANCE	10.4%	0.29	0.94
UK	7.1%	0.35	0.97
CANADA	6.9%	0.32	0.63
US	6.7%	0.38	1.06
BRAZIL	5.4%	0.52	1.21
RUSSIA	5.2%	0.42	0.91
INDIA	3.6%	0.37	0.63
S. AFRICA	25.5%	0.63	3.30

Table 7: Calculated shock index for Social Unrest Scenario.

Monetary policy is endogenised through the Taylor rule, where central banks change nominal interest rates in response to changes in inflation. Relative productivity and net foreign assets determine exchange rates, and trade is the weighted average of the growth in total imports of goods (excluding oil) of all remaining countries. Country competitiveness is determined from unit labour cost.

Modelling the social unrest scenario

The macroeconomic modelling of the social unrest scenario requires shocking a number of key macro-economic variables that are known to drive economic activity.

The variables chosen to model the macroeconomic impacts from social unrest include:

- Labour supply and total level of employment;
- Consumption;
- Market confidence;
- Inflation rate.

The estimated shocks to these variables are summarised in Table 6. Here, we give some details on how those estimates are derived.

Labour supply and employment

Estimating the impact on labour supply and the total level of employment required detailed analysis of the anticipated drop in labour under the conditions specified in this scenario. The total level of employment is estimated as a direct function of the existing labour supply and the expected consequences of the disruption. The difference between labour supply and total employment is used to estimate the anticipated unemployment rate. A decrease in the labour supply is caused by several factors. The largest group is expected to be from the people who are directly participating in social unrest activities, and will therefore be

absent from work. This group includes protesters and people on strike. In addition there will be an indirect decrease in the labour supply caused by disruption to public transport, people who are scared to leave home and employees who take advantage of the situation and use it as an excuse to stay at home. Fear and absenteeism will eventually lead to layoffs, which will decrease the total level of employment and increase the unemployment rate. As a decrease in employment is expected to occur faster than a decrease in the overall labour supply, the net effect is an increase in unemployment.

Unemployment is therefore modelled through adjustments to the labour supply and the total level of employment.

Consumption

In addition, final consumption shocks are applied to take into account anticipated decreases in consumption activity. Overall levels are calibrated to the types of demand downturns and revenue losses expected in similar social unrest scenarios, most notably in specific discretionary consumption sectors. For the model input this is averaged for all economic sectors in a country's economy. A decrease in final consumption is caused by several factors. First, theft and looting from people participating in the riots will prevent store owners from selling these items legitimately. In addition, money spent restocking inventories will leave less money for advertising and marketing in the short term. Thirdly, people not participating in the riots will be scared to leave the home and will therefore not spend money shopping. A downturn in *tourism* is also covered under decreases to final consumption levels.

Inflation

Inflation is expected to increase under this scenario. Riots, strikes and blockages in supply lines will prevent the supply of goods and services coming to market increasing prices. This supply side shock means that goods and services increase in scarcity and thus prices increase.

Market confidence

Market confidence will also be affected. Businesses in the direct line of fire from protestors, e.g., banks and luxury retail outlets, will be the worst affected by market confidence, but indirect effects across all business sectors will also be felt. Long legal battles, consumer protests and international condemnation will all have a large toll on general market confidence.

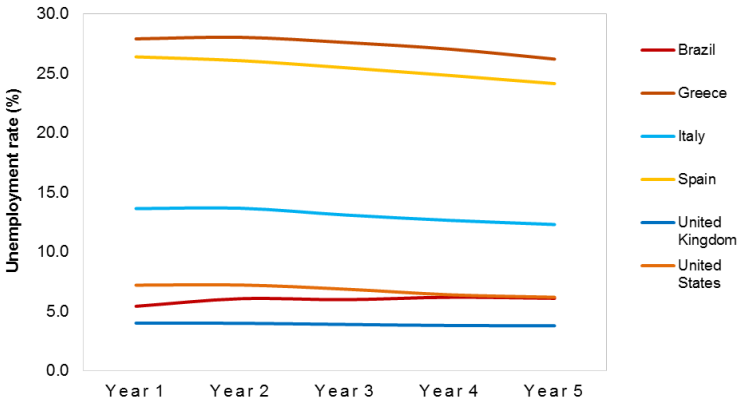

Figure 6: Unemployment rate in the S1 scenario

Country Level Shocks

The macroeconomic impacts of social unrest will have varying effects for different countries. Countries with robust social and political systems will have lower impacts than countries with historically high unemployment and high inequality. Scaling factors were applied to each of the shocks listed in Table 6. Scaling factors are estimated using an index combining the general rate of unemployment, the youth unemployment rate and Gini coefficient. Unemployment, youth unemployment and the Gini coefficient are each given different weights signifying their respective importance in representing social unrest.

In general, the level of macroeconomic shock applied to the various countries under consideration goes up with increases in the unemployment rate and the level of disparity or inequity. Countries that have relatively less unemployment and are more equal are subjected to lower macroeconomic shocks, while countries with high unemployment and are less equal have higher than average impacts.

The magnitude of these shocks used as inputs to the Global Economic Model is provided in Table 7 across the different countries in this scenario.

Variants

S1, S2 and X1 represent the three variants of this scenario. Scenario S1 represents a best estimate of what a social unrest scenario of this type and magnitude might mean for a particular economy. Variant S2 is the same as S1, but the shocks to employment, consumption, inflation and confidence increase by a further 20%. Countries included under variant S1 and S2 include: Sweden, Belgium, Denmark, Netherlands, Greece, Italy, Spain, Germany, France, UK, Canada and the US. The same type of shocks are applied to X1, however, the magnitude of the shocks is increased

by 50% with respect to S1 and the social unrest now extends to the emerging economies of Brazil, India, Russia and South Africa.

Results

Impact on employment

An important economic impact caused by the social unrest scenario is absenteeism from work. This occurs because people are either protesting or too scared to go to work. This is modeled through a direct decrease in the labour supply and therefore causes a decrease in the overall level of output for the economy.

Although some jobs can be completed from home, a large share of the workforce is required to be onsite, on a manufacturing line or manning a shop.

Other economic impacts such as a decrease in consumption activity, reduced market confidence, reduced country credit ratings, decrease in tourism and a drop in foreign direct investment all lead to lower output and an increase in the unemployment rate. The difference between the labour supply and the level of employment gives the unemployment rate. Figure 6 shows the unemployment rate across several countries in the S1 scenario.

Impact on exports and imports

The main impact on exports comes from a decrease in income from tourism. Economies that rely on tourism as a significant source of income will be more heavily affected than countries that have little or no tourism trade. Figure 7 shows the value of receipts from tourism in 2012 as fraction of overall GDP for a selection of different countries in the world.

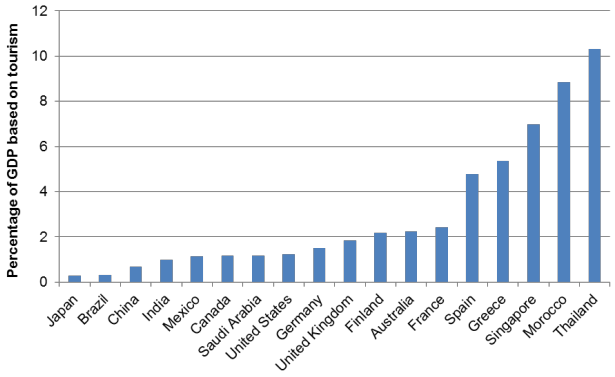

Figure 7: Percentage of income from tourism trade. (Source: World Bank Database)

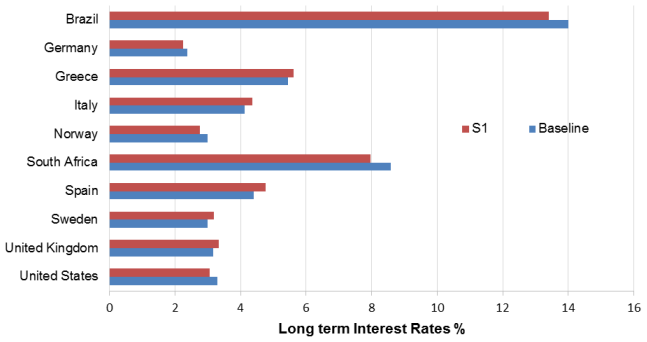

Figure 8: Long term interest rate changes for selected countries as a result of the social unrest scenario (S1) in Year 2

Impact on inflation

The initial impact of social unrest has the effect of increasing prices and therefore increasing the rate of inflation. Higher inflation is caused by shortages in the supply of goods and services getting to market due to protestors blocking transport routes, and looting supplies from shops. This causes cost-push inflation where the aggregate supply of goods cannot meet aggregate demand thus driving up prices. After the protests have subsided supply routes are re-established and are able to deliver goods to the market, but the downturn in economic activity puts downward pressure on prices. This can clearly be seen in Figure 9 where there is an increase in the inflation rate in the first year and then a drop in years two and three. This trend is consistent across all countries in this scenario.

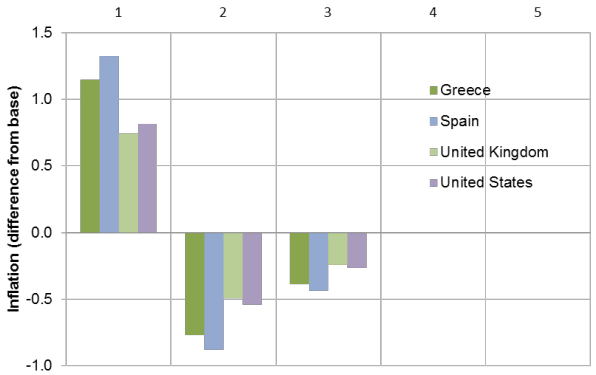

Figure 9: Projected difference from base on the rate of inflation.

Impact on interest rates

Interest rates affect investment. As the financial and economic risks of social unrest propagate around the globe, risk premiums are re-evaluated and interest rates are adjusted.

When investments carry a high risk, premium interest rates increase to match the risk that a loan will not be repaid. As seen in Figure 10 the long term interest rates vary from country to country and result in different impacts.

Interest rates are a significant dimension of the macroeconomic projections as they drive bond prices and yields on investment portfolios for major institutional investors.

Productivity and growth

Social unrest has an impact on productivity and growth. The impacts of social unrest have further varying impacts on different countries. Differences in the level of social unrest between countries depends on factors such as the countries existing unemployment rate, youth unemployment rate, inequality and the general level of social discontent.

As noted above, the major driving factors affecting productivity and growth are: the supply of labour; decreased consumption and market confidence; and higher prices due to cost-push inflation. Wealthy democratic countries are not necessarily isolated from the impacts of this scenario.

This scenario has highlighted that those societies with high inequality and high youth unemployment are more at risk of social unrest than others. In addition countries that are more reliant on tourism and foreign direct investment will also be affected more severely than other countries.

Depending on the scale of social unrest within a country, some countries experience capital flight as businesses begin to worry about long-term prospects and the threat of losing investments.

All economies experiencing social unrest have a decrease in output and, consequently, GDP. In absolute terms the US experiences the largest impact when compared to baseline projections.

Most of the economic impacts occur in the second year and amount to approximately US$300 billion across the countries represented in Figure 8.

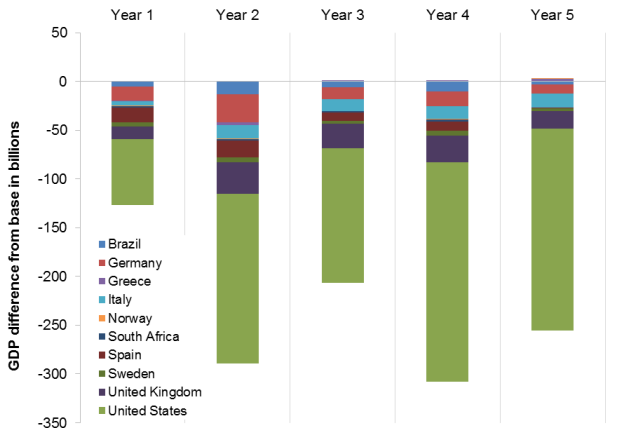

Figure 10: Economic impact of social unrest (S1 compared to base, $US Real, PPP)

GDP@Risk

The macroeconomic consequence of the scenario is modelled as described. The impact of the scenario is compared against the macroeconomic projections of the global economy that is forecast without a crisis occurring, known as the baseline trajectory or 'business as usual'. This is required in order to assess the GDP at risk from this scenario.

The Oxford Economics macroeconomic forecast for the world economy (as of 2014) is for average annual growth of 3.2% sustained for the next decade. This is higher than the average annual growth of 3.0% that the world economy achieved during the boom years of 1980 to 2006, preceding the Great Financial Crisis of 2008-2012. This is a positive outlook, with the size of the global economy reaching $80 trillion by 2025: around 145% of its current size. The Oxford Economics model is not explicitly probabilistic, but the expected baseline is estimated at the median, or 50th percentile, view of a wide fan of uncertainty of all of the potential future trends that might occur. The reality of economic progress resembles a random walk along the trend, with variation and fluctuations occurring from time to time. Modelled views necessarily present a smoothed view of the trend, and this is the view we take as the baseline that is likely to occur without a crisis.

When a crisis occurs, such as the Millennial Uprising scenario considered here, there is a significant deviation from the expected trend in GDP growth. Figure 11 illustrates the dip in global GDP that is modelled to occur as a result of the scenario, in all its variants. These are compared with the expected trend without the scenario (the dotted line). The total GDP loss over five years, relative to the expected forecast without social

unrest occurring, defines the 'GDP@Risk' for the scenario. This is expressed as a % of the total GDP across a five year time horizon. Table 8 provides the GDP loss of each of the variants of the scenario, as total lost economic output over five years, and as GDP@Risk.

Scenario Variant	Duration of Unrest (Months)	GDP Loss over 5 years (GDP@Risk) $Trillion	GDP@Risk as % of Baseline GDP
S1: Standard Scenario	12	1.6	0.4%
S2: +20%	12	4.6	1.1%
X1: +50% & BRIS	12	8.1	1.9%

Table 8: GDP Impact of Millennial Uprising Scenario

Social unrest scenario impact on global GDP

The social unrest S1 scenario is estimated to cause a loss of $1.6 trillion of global output over a five year period, equivalent to a loss of 0.4% of the total GDP over the five year period under baseline projections.

The most extreme variant, X1, is estimated to cause a loss of $8.1 trillion which is equivalent to 1.93% of total GDP over a five year period.

For reference, the Great Financial Crisis of 2007-2012 caused loss of output relative to the trend of global growth prior to the crisis, of $18 trillion. Scaled to current (2014) GDP values, this would be a GDP loss of $20 trillion. The X1 variant of the social unrest scenario is estimated to cause about one-third of the loss in output when compared against the Great Financial Crisis of 2007-2012.

As shown in Figure 11, social unrest has a significant impact on the global economy and its effects are felt for a number of years after the social unrest wave is over. The world experiences an initial downturn in loss of output during the year that a social unrest event occurs, and then goes through a recovery cycle. In the standard variant, S1, the impact is relatively mild, decreasing the growth rate from what otherwise would have been expected in the baseline assumption, over a period of several years. The increase of severity of the scenario assumed in variant SI makes a very significant difference, causing the global economy to slow and stagnate in year 2, before seeing a recovery in year 3, and with increased pace of recovery from pent-up demand, closing the gap of some of the lost output towards the end of year 4. Variant XI causes a similar initial impact to S2, but a delayed worsening of the economy in year 2 that takes several years to recover from.

Global loss of US$ 1.6 to 8 trillion

In this analysis, we have shown that social unrest will have a clear and significant negative impact on the global economy. While absenteeism from work, decrease in consumption, and increases in inflation are important factors in determining economic output, other factors such as loss in tourism trade, a general decrease in market confidence, capital flight, a drop in foreign direct investment, and changes to interest rates all have important effects on output and growth. Nations with high unemployment and inequality experience the most severe economic consequences from social unrest. This scenario does not result in a recession for any country, but it does prolong the periods of low or negative growth for Greece, Spain and Italy. The total cost of the scenario to the global economy is estimated to be between US$1.6 and US$8 trillion.

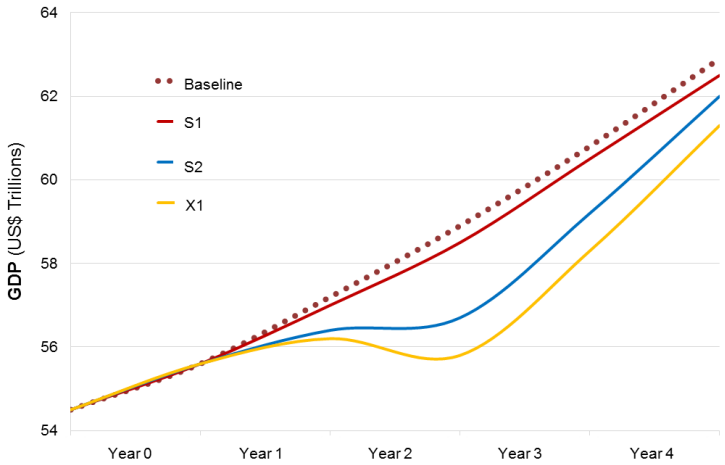

Figure 11: Estimated loss in global output as a result of the Millennial Uprising scenario: Global 'GDP@Risk'

8 Impact on Investment Portfolios

Introduction

The macroeconomic effects of the Millennial Uprising Scenario will have an inevitable effect on the capital markets. This section considers the market impact of the conflict, and the consequences for investors in the capital markets.

The performance of equities and bonds in different markets are estimated from the macroeconomic consequences, and compared with a baseline projection of their expected average performance that would result from the economic projections without the conflict occurring.

Valuation fundamentals

Note that these are estimates of how the fundamentals of asset values are likely to change as a result of these market conditions, as directional indication of valuation. This analysis is not a prediction of daily market behaviour and does not take into account the wide variations and volatility that can occur to asset values due to trading fluctuations, sentiment, and the mechanisms of the market.

Portfolio structure						
	USD	GBP	Euro	Yen	Other	Total
Government med/long	8%	7%	5%	2%	2%	24%
Government short	6%	5%	4%	2%	3%	20%
Cash	2%	1%	1%		1%	5%
AAA short	2%	2%	2%	1%	1%	8%
AAA med/long	4%	3%	1%	1%	1%	10%
AA short	1%	1%	1%			3%
AA med/long	2%	1%	1%		2%	6%
A short						0%
A med/long	2%	2%	2%	2%		8%
BBB and lower	2%	2%	1%		1%	6%
Equities etc	2%	2%	2%		4%	10%
Total	31%	26%	20%	8%	15%	

Table 9: Standardized investment portfolio structure

A standardized investment portfolio

We explore the impact of the market change by considering the performance of a standardized, hypothetical investment portfolio. Every investment portfolio has a different structure and balance. The impact on each asset class is presented below, to assist with assessing how these projected market changes apply to an individual unique portfolio.

The standardized investment portfolio is based on a structure that is focused on high quality and fixed income assets, of the type that major insurance companies hold.

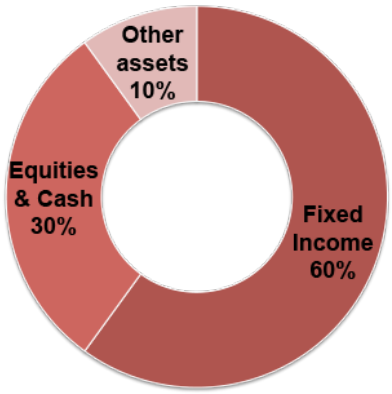

Figure 12: Asset classes in standardized portfolio: high proportion of fixed income

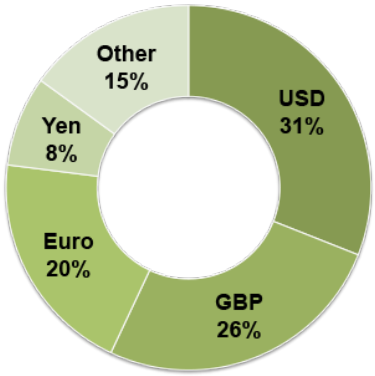

Figure 13: Geographic market spread of standardized portfolio

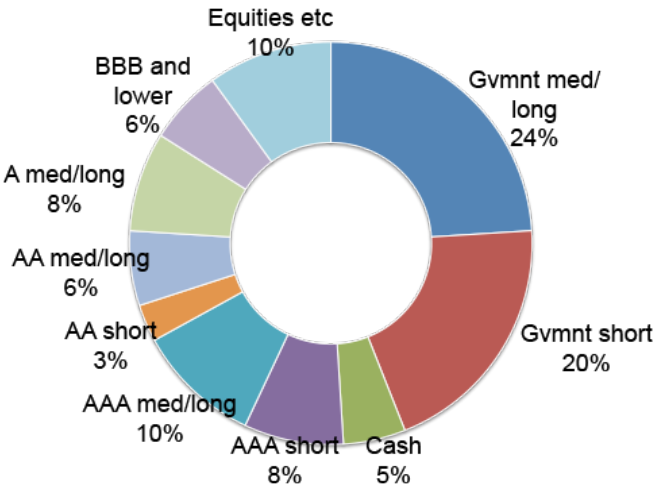

Figure 14: Assets and ratings of standardized portfolio

We consider a high-quality fixed-income portfolio with about 70% of investments in sovereigns and corporate bonds most of which are investment grade, rated A or higher.

Details of the standardized investment portfolio are shown in Table 9 and Figures 12 to 14.

Long-term bonds are assumed to have an average maturity of 10 years, while short to medium bonds have a maturity of 2 years for US, UK and Japan, and 3 months for investments in the Eurozone.

Investments are spread across countries like the US, UK, Eurozone, Japan and emerging markets.

Typically the geographical market structure of an investment portfolio for an insurance company is carefully matched to the geographical locations of their underwriting exposures, to minimize exchange rate risk. Different insurer geographical exposure will result in different market distributions.

Computation of returns

The estimation of portfolio returns is carried out using standard methods outlined as follows.[2] For each bond b, the return $r_b(t)$ at time t is computed as

$$r_b(t) = y_b(t) + g_b(t)$$

where $y_b(t)$ is the bond yield and $g_b(t)$ the capital gain.

The yields on government bonds are taken from the output of the macroeconomic analysis discussed in the previous chapter. For corporate bonds, the yields are computed adding a credit spread to the yields of government bonds with corresponding maturity. The values used for credit spreads are reported in Table 10 and are similar to those reported for US corporate bonds in 2006 (we have checked that qualitative pattern of results discussed below is robust with respect to changes in credit spreads up to a factor).[3]

The capital gain is computed from bond yields as

$$g_b(t) = -D_b\,[y_b(t) - y_b(t-1)].$$

In this equation, $-D_b$ is the bond duration, for which we assumed the following values: $D_b = 7$ for ten years bonds, $D_b = 1.8$ for two years bonds and $D_b = 0.4$ for bonds with maturity of three months.

In our analysis we assume no default on sovereign bonds, while defaults on corporate bonds are accounted for through the introduction of a discount factor, calibrated to obtain in the baseline scenario the default probabilities shown in Table 10. For the stressed scenarios, we arbitrarily assume default probabilities increase by a factor 3 (the qualitative pattern of the results here discussed are robust with respect to changes of this parameter).

Stock returns are computed as

$$r_s(t) = y_S(t) + g_s(t),$$

where $y_S(t)$ is the dividend yield of stock s and $g_s(t)$ its capital gain.

The latter is computed from the stock price $p_s(t)$ as

$$g_s(t) = \frac{p_s(t) - p_s(t-1)}{p_s(t-1)}.$$

The macro-economic model produces a forecast for dividend yields of UK stocks that we assume to be similar to those of US and Euro-Zone stocks.

The return on the whole portfolio is then computed taking a weighted sum over the returns of all assets. A fundamental assumption we make in our analysis is that of considering a passive investment strategy. This means that no portfolio rebalancing is accounted for, but rather we held the composition of the investment portfolio at a fixed rate over time. This assumption is certainly unrealistic as we may expect an asset manager to react to changing market conditions in order to reduce losses and large fluctuations in returns. It is, however, a useful exercise to consider what would happen to a fixed portfolio, particularly because this represents a benchmark to compare with the performance of dynamic strategies. Understanding what drives the behavior of the fixed portfolio at different times can, for instance, give useful insight towards the design, of an optimal investment strategy on a counterfactual level.

2 For a similar study methodology see: Government of Singapore Investment Corporation: *Impact of a Global Influenza Pandemic on Financial Markets and Institutional Portfolios* (2011).

3 Hu, *Management of Chinas Foreign Exchange Reserves: A Case Study on the State Administration of Foreign Exchange*, European Commission Economic Papers 421 (2010).

Credit rating of corporate bond	Credit spread (BP)	Default probability (per year)
AAA medium/short	16	0.052%
AAA long	68	0.052%
AA medium/short	37	0.052%
AA long	80	0.52%
A long	51	0.29%
BBB and lower	95	2%

Table 10: Credit spreads and default probabilities for corporate bonds

Results

The results of our analysis are presented in Figures 15, 16, and 17. In Figure 15 we have plotted the percentage change of portfolio returns for the different variants of the scenario, with respect to the baseline. In all cases we observe significant volatility.

Interestingly, increasing the severity of the scenario does not dramatically alter the scale of such fluctuations which always range between -1% and 1.5%.

We also consider the impact of the scenario on different asset classes. The aim of this exercise is to assess the performance of different groups of assets. The summary of this analysis performed for the S1 (standardised) variant of the scenario can be found in Figure 16 and 17.

In Figure 16, we present a breakdown of investments by geographical area. From the figures we see that investments in the UK and Euro-zone are the most affected by the scenario.

Figure 17 represents a breakdown with respect to the fixed-income and equities. In particular, from this plot we are able to observe a significant increase in volatility of the equity market.

Little variation is observed in fixed income markets, however. This may be attributed to investors' concerns following the Millennial Uprising scenario.

Similar conclusions can be drawn for other scenario variants, concerning the importance of different groups of assets.

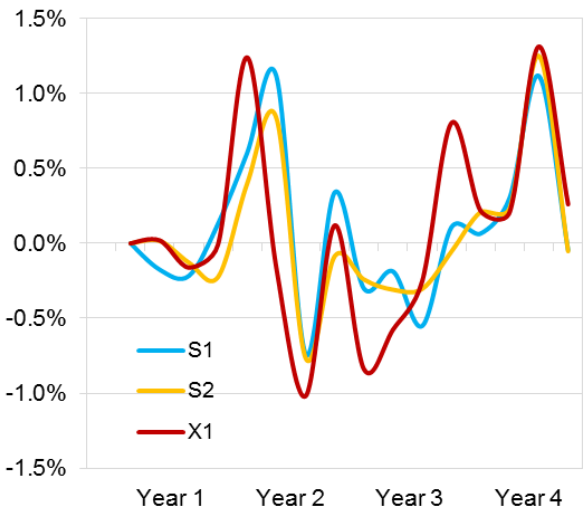

Figure 15: Percentage change with respect to baseline of portfolio returns under different scenarios.

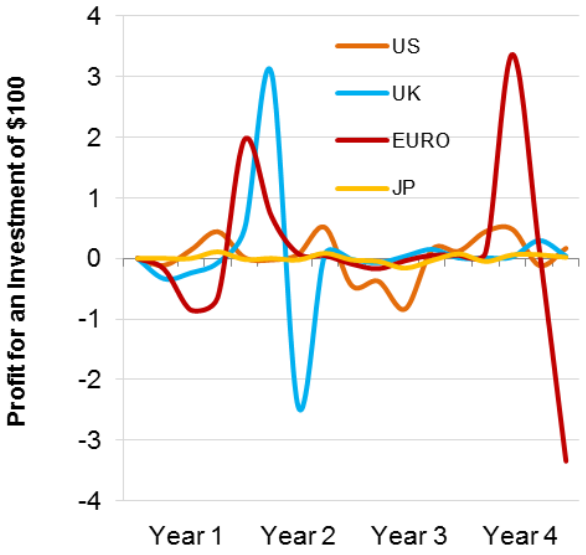

Figure 16: Relative return of a $100 investment in different geographical areas.

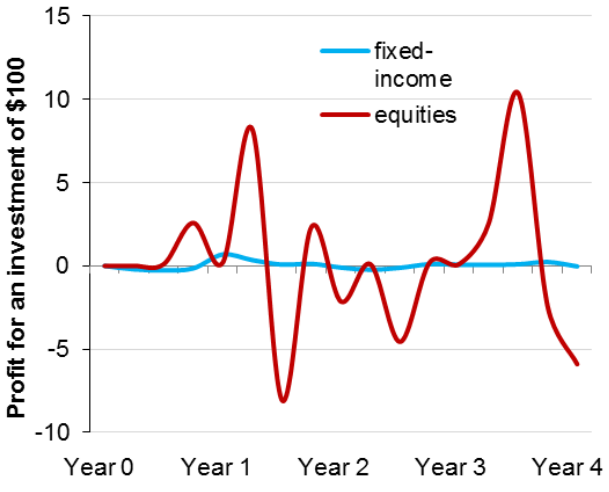

Figure 17: Relative return of a $100 investment in fixed income and equities.

Conclusion

We have given performance forecasts for various assets that make up a standardised financial investment portfolio, using outputs based on the macroeconomic model in Section 7. We have estimated the performance of the portfolio under the different variants of the Social Unrest scenario and compared each with the business as usual performance.

The analysis presented in this section is very stylized, particularly in regard to passive asset management strategies. Nonetheless, it represents a useful benchmark against which it is possible to compare more sophisticated asset management strategies. In particular, it can be used to discuss strategies that improve portfolio performance on a counterfactual basis under the scenario.

An important issue that we have not addressed in our analysis is that of systematically testing the stability of the results, with respect to the parameter settings used in the earlier stages of the scenario development. This is, to a certain degree, taken into account in our consideration of different scenario variants, but a more systematic analysis will be needed in this respect.

				Base Levels	Short Term Impact (△Max)			Long Term Impact (△Max)		
				Yr0Q4	Yr1Q4			Yr3Q3		
				B0	S1	S2	X1	S1	S2	X1
US										
Bonds Short	TSY 2Y	Interest rate, 2-year T-notes (levels)	△	0.3	-0.10	-0.10	-0.10	0.07	-0.98	-0.99
Bonds Long	TSY 10Y	Interest rate, 10 year government bonds (levels)	△	2.7	-0.12	-0.12	-0.13	0.11	-0.97	-0.99
Equities	S&P	Share price index (% change)	%	100	3.96	3.38	4.12	-1.76	-17.49	-22.69
Credit	YSA CSPA	Credit spreads, period average (levels)	△	0.3	-0.09	-0.07	-0.09	0.15	0.38	0.49
Inflation	USA CPI	Consumer price index (% change)	%	100	2.12	2.54	3.18	0.00	0.00	0.00
UK										
Bonds Short	GBP 2Y	Interest rate, 2-year T-notes	△	0.5	0.44	-0.04	0.00	0.08	-0.58	-0.68
Bonds Long	GBP 10Y	Interest rate, 10 year government bonds	△	2.8	0.47	-0.02	0.02	0.11	-0.62	-0.71
Equities	FTSE	Share price index	%	100	2.06	3.69	4.38	-1.141	-4.96	-6.99
Credit	GBP CSPA	Credit spreads, period average	△	0	0.00	0.00	0.00	0.00	0.00	0.00
Inflation	GBP CPI	Consumer price index	%	100	0.97	1.16	1.45	0.00	0.00	0.00
Foreign Exchange	USD/GBP	Exchange Rate (US$ £GBP)	%	1.6	1.36	-0.90	-0.95	-0.98	1.66	1.25
Germany										
Bonds Short	DEM 2Y	Interest rate, 2-year German gov bond yields	△	0.2	1.87	1.14	1.33	0.04	-0.34	-0.32
Bonds Long	DEM 10Y	Interest rate, 10 year German gov bond yields	△	1.8	1.47	0.89	1.05	0.09	-0.41	-0.39
Equities	DAX	Share price index, Deutscher Aktien Index	%	100	-5.31	-3.21	-3.77	-3.31	-8.31	-12.17
Credit	DEM CSPA	Credit spreads, Period Average	△	1.8	0.09	0.06	0.07	0.07	0.12	0.17
Inflation	DEM CPI	Consumer Price Index, Germany	%	100	0.72	0.86	1.08	0.00	0.00	0.00
Foreign Exchange	USD/EUR	Exchange Rate (US$ per Euro)	%	1.3	5.12	3.13	3.59	-0.51	1.24	1.21
Japan										
Bonds Short	JPY 2Y	Interest rate, 2-year Japan gov bond yields	△	0.1	-0.03	-0.04	-0.04	-0.17	-0.72	-0.72
Bonds Long	JPY 10Y	Interest rate, 10 year Japan gov bond yields	△	0.6	-0.04	-0.05	-0.05	-0.08	-0.71	-0.71
Equities	NIKKEI	Share price index, Nikkei 225	%	100	1.16	1.15	1.36	-1.44	-0.32	-1.24
Credit	JPY CSPA	Credit spreads, Period Average	△	0.2	0.00	0.00	0.00	0.00	0.00	0.00
Inflation	JPY CPI	Consumer Price Index, Japan	%	100	-0.03	-0.09	-0.16	-0.32	-1.34	-2.17
Foreign Exchange	USD/JPY	Exchange Rate (US$ per JPY)	%	0.01	0.18	0.15	0.15	-0.55	0.53	0.60

Table 11: Short term and long term impact on representative portfolio assets from all social unrest variants.

9 Managing Risk

This scenario is offered as a sample stress test that organizations can use to consider how a future social instability could disrupt their activities and how to improve their resilience to such a scenario. It illustrates an example of the type of impact that social unrest could have. The example starts by considering the type and severity of social unrest scenario that could be expected with a 1% probability of exceedance per year – a '1-in-100' type of event.

We argue that this level of annual probability depicts a widespread incidence of level 3 social unrest, in this case outbreaks of mob rule in many major city centres in Europe and United States. We explore this scenario and describe one particular way that it might play out.

Where & when might social unrest unrest occur?

It is not the only scenario which presents a period of unrest of this magnitude. The Arab Spring offers plentiful examples of civil disorder, some instances developing into civil war. Management of the risk of conflicts will recognize the wide range of geographical locations, geopolitical actors, and attributes of tension and instability that can occur.

While civil unrest typically has national or geopolitical boundaries, increasing globalisation means that we are all more exposed to such events and their effects. A global organization should review the territories where it does business and consider the frequency of occurrence of different types of geopolitical disruption that it might expect in those parts of the world. It should then plan around, and expect to have to manage, a crisis related to social unrest every few years in at least one part of the higher risk territories where it does business. It could consider that there is about a 10% chance that the organization will need to manage a situation about as severe as the one depicted in this scenario within a 10 year outlook. There is also a small, but feasible, chance that the business may have to face an extreme social unrest situation that would be much worse than the one described here.

Managing the risk of disruption due to social unrest means being prepared for a wide range of different types of instability, not just the scenario described in this report. The objective of considering a stress test scenario of this type is to be resilient across a range of potential crises that could occur, rather than being focused on the scenario itself.

Prediction versus preparedness

Unrest typically occurs after a period of rising tension, be it economic, political or based on human rights. Rising tension can be monitored and is indicative of a potential for a future conflict. The precursors to instability can be seen in unfavourable statistics, whether standard macroeconomic variables such as unemployment rates, inflation rates or per capita GDP; health measures such as infant mortality or average life expectancy; social indicators, (e.g., percentage of 18-25 year old males with convictions, average level of education, teen pregnancy rates, and measures of social inequity.) These can be used by risk managers to assess the relative likelihood that they might benefit from contingency plans to mitigate the potential impact of an impending social catastrophe.

Short term versus long term

Risk managers differentiate between long term preparedness and short term contingency measures. Long term measures might identify regions of the world with potential for instability some months or years ahead, and use this risk assessment in the strategic deployment of resources (such as geographical structuring of business operations, supplier locations, managing an international investment portfolio, or underwriting a portfolio, and other business planning). Short term measures might involve actions with only days' or weeks' notice, to carry out contingency plans such as logistical or managerial redeployments, emergency purchasing or finding alternative suppliers, rapid restructuring of investment portfolios, or changing contractual conditions.

False positives

With short term measures, the difficulty is balancing the precautionary principle with false alarms that are themselves costly and undermine confidence in the risk management process. Rising social tension does not often lead to a disorder.

False positives – instances of rising tension that are defused before the outbreak of serious civil disorder – are more likely than correctly predicted outbreaks.

Human nature however is unforgiving in the balance between uncertainty beforehand, and the event in retrospect. Public opinion, political outcry, inquests, and legal judgments increasingly assume that events that have occurred were predictable, and are becoming less tolerant of uncertainty and judging probabilities beforehand. Companies that have developed clear rules and protocols for dealing with these uncertainties can better defend decisions made during the crisis after the event.

The triggering of social unrest is not easily predictable. In approaching the issue of managing this risk, it is worth assuming that the process is a random occurrence with a low probability. Don't expect to forecast it beforehand, but have contingency measures in place to move quickly and decisively to mitigate the consequences when it occurs.

Organizations

The threat of social unrest is principally a threat to the trading continuity of organizations, with the potential to disrupt the transportation of goods around the globe, to impact markets, and to affect suppliers and activities in different regions of the world.

Companies with well-considered contingency plans prepared in advance will be better equipped to manage the operational risk posed by a localized incidence of social unrest.

Workforce protection

A primary responsibility is obviously the wellbeing of your workforce. Ensuring that employees are protected from injury, and as far as possible removed out of harm's way is vital.

Clients who are engaged with your business at times of crisis also need to be monitored and protected.

Crisis management and rapid recovery

Information is often a scarce currency in dealing with the emergency period. Ultimately a severe crisis may make even the information infrastructure fail. In the 'fog of crisis' managers may have to make decisions without reliable information about everything that is happening.

As the crisis unfolds, management will need to make hard decisions, involving trade-offs between different areas of business losses, and costs and liabilities. Making this decision based on clear guidelines drawn up beforehand is better than improvised or localized decisions. Studies of business crises have demonstrated that organizations that have good recovery plans to restore business operations quickly can gain major competitive advantage over rivals when several are affected by the same event.

Choke points

Contingency plans would include alternative methods and routes for getting goods to market, and people to their business locations. This scenario highlights the importance of various European and US cities as chokepoints for commercial activities, whether business to business, retail or transportation.

A business that has most of its core activities concentrated in one place, for example a global business that has its senior management functions concentrated in an HQ in London, is more vulnerable to disruption if something impacts that city or location.

Dependency and uniqueness of physical or informational components is also a strategic issue – the ease with which the suppliers might be substituted for others could be a consideration in business risk management, with implications for design and procurement.

Counterparty and financial challenges

In addition to considering how a social unrest crisis might affect the organization itself, consideration should also be given to how business counterparties might be impacted. Some counterparties may be so badly affected that they are unable to continue trading. Credit risk tolerance and cash flow planning should apply stress test scenarios like this one to develop good financial risk management practice for this contingency.

Financial challenges include currency exchange rate risks, and potential for entire countries to change as markets for an organisation's products and services.

A risk management culture

Developing a risk management culture in an organization requires constant awareness raising

that these kinds of crises are possible, and having plans and rehearsals for response to an event of this type.

Overall, the long term financial planning for an organization needs to recognise that disruption from a wide range of causes can and will occur from time to time. Although difficult to quantify, these risks do need to be planned for, and incorporated into the management of the business. Ultimately it may be that extreme risks need to be reflected on balance sheets.

This report is intended to contribute to the awareness raising and disaster planning process for the risk management of an organization.

Insurance companies

Insurers face the operational risk management issues of a sizeable organization, and in addition have to deal with the reporting and settlement of claims during a crisis of this type, as well as managing the impact to their investment portfolio.

Exclusions and unexpected claims

This report has highlighted that insurers will rely heavily on exclusion clauses in their policy contracts to reduce the losses they might be exposed to as a result of illegal activity.

There are however many lines of insurance business that will suffer claims as a result of a scenario like this one, for example, contingent business interruption. Understanding how unexpected losses might arise will enable strategies to manage them, ranging from risk transfer and reinsurance or retrocession arrangements, appropriate capital allocation and aggregation limit controls, improved contractual conditions, and pricing adequacy to cover potential loss.

Multi-line correlation and capital models

Capital models of multi-line insurers assume a certain dependency structure between different insurance business lines and assets. This scenario helps inform the correlation assumptions by providing this example where losses correlate across multi-line exposures. We also show that the asset side of the business will be affected in the same scenario, so full capital modelling should include asset and underwriting loss correlation in these kinds of events.

Unmodelled risks

As discussed in this report, social unrest is not a peril that lends itself very readily to conventional probabilistic analysis. Capital models do not today include explicit allocations for these unrecognised risks, but there are clearly classes of unmodelled risks for which losses can occur that need to be incorporated into the risk management processes of an insurer.

This report is intended to add to awareness-raising of these less-well-understood risks by insurers.

Investment managers

This scenario explores a specific social unrest scenario and demonstrates that there will be a significant impact on financial markets, particularly equities. Investors will typically pursue their classic ‘flight to quality’ strategies during these major market movements.

Investors can create portfolios that are able to offset and hedge some of these expected movements. Many investors structure their portfolio to pursue an investment return strategy but also to be resilient to major market shocks of this type, including the ability to rapidly move positions and to create liquidity in crisis situations.

Liquidity crisis

If the banking system is in a vulnerable situation of low liquidity or unstable leveraging, then the shock from the macroeconomic losses that result from this scenario are likely to trigger a cascading failure of the financial market system. The more extreme variants of the scenario will almost certainly trigger defaults of major corporations and these could potentially cause liquidity shortages among their counterparties and a general credit crisis that could escalate across the international financial system. In these kinds of financial crises, price plunges of investment assets are highly correlated.

The market will take some time to recover and different asset classes will perform in different ways and at different rates throughout the process.

Policy-makers

The threat of social instability has long been a focus of national policy-makers, and many mechanisms now exist for providing outlets for grievances, resolution of disputes and arbitration to minimize the actual outbreak of unrest.

Understanding linkages and dependencies

Trade linkages that are vulnerable to social unrest may not be obvious without analysis. Countries may also not realise the extent to which their primary trading partners may be reliant on another trading relationship with a third country which is in turn vulnerable to disruption from social instability.

Essential food and energy supplies may be vulnerable to disruption, and the supply chain of national essentials may be as vulnerable as corporate supply chains to transportation disruption, congestion at choke points, and concentration risk of suppliers. At a national level, civil protection plans may need to consider issues of diversification of suppliers and strategic distribution concerns.

Emerging risk

We argue that the threat of social unrest is of sufficient magnitude to be taken very seriously by everyone. This risk has implications for individual organizations, insurance companies, investment managers, and most critically of all, to the national and international policy-makers who need to address this threat.

We offer this report as a way to highlight the risk, and to encourage actions by all of the major stakeholders in managing the risk of social unrest.

10 Bibliography

Recommended Further Reading

Badiou, Alain; 2012; *The Rebirth of History: Times of Riots and Uprisings*, Verso Books; ISBN-10: 1844678792

Bloom, Clive; 2010; *Violent London: 2000 Years of Riots, Rebels and Revolts*; Palgrave; ISBN-10: 0230275591

Van Gelder, Sarah; 2012; *This Changes Everything: Occupy Wall Street and the 99% Movement*; Berrett-Koehler; ISBN-10: 1609945875.

References

Almer, Christian and Laurent-Lucchetti, Jeremy and Oechslin, Manuel, *Income Shocks and Social Unrest: Theory and Evidence* (December 19, 2011). Available at SSRN.

Aon, 2005, 'Life business fuels growth in French market', *Risk Bulletin*, p.12

Arezki, Rabah, and Markus Bruckner. *Food prices and Political Instability. International Monetary Fund* Working Paper, 2011.

Associated Press, 2012, 'Greeks Clean Up Damage After Riots Engulf Athens' [Online] Ap via *Business Insider,* New York (September 2013)

Auf der Heide, E.; O'Leary M., 2004, 'Common Misconceptions about Disasters: Panic, the "Disaster Syndrome," and Looting'; *The First 72 Hours: A Community Approach to Disaster Preparedness*; Lincoln (Nebraska), iUniverse Publishing.

Barsky, L., 2004, 'Looting in Disasters', Presentation, University of Delaware Disaster Research Center.

Barsky, L.; Trainor, J.; Torres, M.; 2006, 'Disaster Realities in the Aftermath of Hurricane Katrina: Revisiting the Looting Myth', Quick Response Research Report 184. Boulder, CO: University of Colorado Natural Hazards Center.

BBC NEWS, 2012 'France court overturns Clichy police verdict' [Online] *BBC*

BBC NEWS, 2013, 'Detroit becomes largest US city to file for bankruptcy' [Online] *BBC*

Berman, G. 2011, 'The August 2011 riots: a statistical summary - Commons Library Standard Note' [Online] Parliament Standard notes SN06099, 2011

Beraldo D. and J. G. Paez (2013), 'The #OCCUPY network on Twitter and the challenges to social movements theory and research', *International Journal of Electronic Governance*, 6 (4) 319. DOI: 10.1504/IJEG.2013.060646

Bloom, Clive; 2012; *Riot City: Protest and Rebellion in the Capital*; Palgrave Macmillan; ISBN-10:1137029358

Brian, J. 2011, "Occupy London' start camp in Finsbury Square' [Online] *BBC News*

Briggs, Daniel; 2012; *The English Riots of 2011: A Summer of Discontent*, Waterside Press; ISBN-10: 1904380883

Byrne, Janet; 2012; *The Occupy Handbook*; Back Bay; ISBN-10: 0316220213

Carter, H. Dodd, V. Laville, S. 'England riots to cost taxpayers at least £133m in policing and compensation'. [Online] *The Guardian*

CBC News Online, 2005, 'France Riots: Understanding the violence', *INDEPTH*

Chomsky, Noam; 2012; *Occupy*; Penguin; ISBN-10: 0241964016

CNN, 2005, Relief workers confront 'urban warfare': Violence disrupts evacuation, rescue efforts in New Orleans. Friday, September 2, 2005.

Cozens, C. 2005 'French TV boss admits censoring riot coverage' [Online] *The Guardian*

Davis T.P. Fry, H.M. Bishop, S.R. & Wilson, A.G. 2012 'Figure: The effect on severity of modifying (a) the number of police officers, and (b) their response lag in A mathematical model of the London riots and their policing' [Online] in *Scientific Reports*, Vol 3, Article 1303, February 2013

DiPasquale., D, and Edward L. Glaeser. 'The Los Angeles riot and the economics of urban unrest.' *Journal of Urban Economics* 43.1 (1998): 52-78

Delacourt, S. Rider, D. 2010, 'Pressure builds on Ottawa for compensation' [Online] *The Toronto Star*

Elliott, Chris; 2011, *Civil Unrest: Rioting in our Cities*, Guardian Books

'England Riots: Was Poverty a Factor?' *The Guardian*. 6 Dec 2011

Euronews, 2008, 'Greek shop owners count cost of ritos' [Online] *Euronews*

European Central Bank - Historical exchange rates 'USD/EUR rate' [Online] *ECB*, Bonn

Ethnos, 2011 'Ο Μάης του Facebook και με ομπρέλες' [Online] Ethnos, Athens, Greece

Falksohn, R. Hüetlin, T. Leick R. Smoltczyk, A. & Traufetter,G. 2005 'Rioting in France: What's Wrong with Europe?' [Online] *Der Speigel*, Berlin

Fearon, James D., and David D. Laitin. 'Ethnicity, insurgency, and civil war.' *American Political Science Review* 97.1 (2003): 75-90

Featherstone, L., 2005, 'Race to the Bottom: Slow Katrina evacuation fits pattern of injustice during crises'; *Grist Magazine*, 08 Sep 2005.

Fender, John 'A general equilibrium model of crime and punishment' *Journal of Economic Behaviour & Organization* 39 (1999) 437–453

Fergany, E.A.; Sawda S. (2009). 'Estimation of Ground Motion at Damaged Area During 1992 Cairo Earthquake Using Empirical Green's Function'. Seismological Research Letters 80 (1): 81–88

Frances, F. 2011. *Horizontal Inequalities as a Cause of Conflict: A Review of CRISE Findings,* World Bank Development Report 2011

Fry, H. 'A Mathematical Model of the London Riots and Their Policing.' *Scientific Reports 3, 2013*

Fuller, Gary, and Forrest R. Pitts. 'Youth cohorts and political unrest in South Korea.' *Political Geography Quarterly* 9.1 (1990): 9-22

Florida, R. 2011 'Map of the Day: America's Poverty Belt' [Online] *The Atlantic*

Goodale, G. 2011, 'Small-Business Owners Tell Occupy Wall Street: You're Hurting the 99 Percent' [Online] *Christian Science Monitor*

Governor's Office of Emergency Services, 1990, *Law Enforcement Operations Report: Loma Prieta Earthquake*. Sacramento: State of California, Governor's Office of Emergency Services, Law Enforcement Division.

Greeley, A..W., 1906, *Earthquake in California, April 18, 1906: Special Report of Maj. Gen. Adolphus W. Greeley, U.S.A., Commanding*, The Pacific Division, San Francisco, Cal., July 30, 1906; California State Military Department; The California State Military Museum.

Groden, C. 2013, 'The Wages of Bankruptcy: Stockton's Cautionary Tale for Detroit' [Online] *Time Magazine*

Hansen, G., Condon, E., 1989, *Denial of Disaster: The Untold Story and Photographs of the San Francisco Earthquake and Fire of 1906*, Cameron and Company, San Francisco.

Henegan, T. 2007 'Why we don't call them "Muslim riots" in Paris suburbs' [Online] *Reuters*

Henely, J. 2011 'Striking parallels between UK riots and France 2005 unrest' [Online] *The Guardian*

Henely, J. 2005. 'Disabled woman set on fire as Paris riots spread' [Online] *The Guardian*

Henrik Urdel & Jennifer Dabbs Sciubba, *Demography and Conflict: How Population Pressure and Youth Bulge Affect the Risk of CivilWar, Environmental Change and Security Program*, Woodrow Wilson International Center for Scholars, March 5, 2007

Hollinger, P., 2005, 'Sarkozy counts cost and unveils plans to stop unrest', *FT.com*, November 28 2005.

Home Affairs Committee, 2009 'Eighth Report Policing of the G20 Protests - session 08/09' [Online] UK Parliament, Home Affairs Committee, London

Home Office, October 2011 '*An overview of recorded crimes and arrests resulting from disorder events in August 2011'.*

Jackson, Ross; 2012; *Occupy World Street: A Global Roadmap for Radical Economic and Political Reform*, Green Books; ISBN-10: 0857840584

Jargowsky, P.A. & Park, Y. 2008 'Cause or Consequence? Suburbanization and Crime in U.S Metropolitan Areas' [Online] *National Poverty Center Working Paper Series* 08-012, National Poverty Centre, University of Michigan

Javier Alcántar-Toledo and Yannis P. Venieris, 2013; "The Budget, Growth and Sociopolitical Instability." *European Journal of Political Economy*

Imai, K., and Weinstein, Jeremy.; 2000 'Measuring the Economic Impact of Civil War,' *CID Working Paper* No. 51, June 2000

Klein, Joe; 2012; *What is Occupy?* Time Home Inc Entertainment; ISBN-10: 1603209417

Knabb, Richard D; Rhome, Jamie R.; Brown, Daniel P; 2006. 'Tropical Cyclone Report: Hurricane Katrina: 23-30 August 2005' National Hurricane Center; The deadliest, and most expensive United States tropical cyclones from 1851 to 2010 (and other frequently requested Hurricane facts). *National Climatic Data Center, National Hurricane Center*. National Oceanic and Atmospheric Administration

Kotkin, J. 2010, 'The Changing Demographics of America' [Online] *The Smithsonian Magazine*

Lagi, Marco, Karla Bertrand, and Yaneer Bar-Yam*; 2011 The Food Crises and Political Instability in North Africa and the Middle East*, arXiv:1108.2455v1 (August 10, 2011)

LAPD, 2006, 'Crowd management and riot suppression: the work of the Mounted Unit, SWAT and other departments', *The Los Angeles Police Department*.

Le Monde avec AFP, 2005 'Le Conseil d'Etat refuse de suspendre l'état d'urgence' [Online*] Le Monde/AFP*, Paris

Lewis, Paul. 2011; 'Reading the Riots: Investigating England's summer of disorder.' London: *Guardian/LSE* 2011

Marshall, Monty G., and Keith Jaggers. 2002; 'Polity IV project: Political regime characteristics and transitions, 1800-2002.'

McKinsey & Company, 2002, 'Improving NYPD emergency preparedness and response.' New York: New York City Police Department.

MSNBC, 2005, 'Chirac addresses social biases as fuel for rioting: French president admits 'undeniable problems' in poor neighborhoods', Nov. 10, 2005

Moore H.E., 1958. *Tornados Over Texas: A Study of Waco and San Angelo in Disaster,* University of Texas Press, Austin.

McPhail, Clark. 1971 'Civil disorder participation: A critical examination of recent research.' *American Sociological Review*: 1058-1073

Nossiter, A.,; 2006, 'Venerable Church Burns in New Orleans', *New York Times*, June 28, 2006.

Novak, C.A.; 1995, *The Years Of Controversy: The Los Angeles Police Commission 1991-1993*, (45 pages) ISBN 1-884614-09-04.

Oklahoma City Document Management Team, 1996. *Murrah Rescue and Recovery Operation: Final Report to the Mayor and City Council.*

Pierre, R.E.; and Gerhart, A.; 2005, 'News of Pandemonium May Have Slowed Aid: Unsubstantiated Reports of Violence Were Confirmed by Some Officials, Spread by News Media', *Washington Post*, October 5, 2005.

Piketty, Thomas; 2014; *Capital in the Twenty-First Century*, Harvard University Press; ISBN-10: 067443000X

Police Foundation, 1994, 'Civil Disorder: What Do We Know? How Should We Prepare?' (1994); Proceedings of the Police Foundation conference, (166 pages) ISBN 1-884614-03-5

Porter, B.; and Dunn, M.; 1984, *The Miami Riot of 1980*; D.C. Heath and Company, Lexington, Massachusetts.

Reuters, Paris France, via Latin American Herald Tribune, 2005 'French Riots were not Organised' [Online] *Latin American Herald Tribune*

Rosenbaum, S.H.; 2001, *Investigation of the Cincinnati Police Division into the Civil Disorder April 2001*. October 23, 2001.

Salanié, B., 2005, 'The Riots in France: An Economist's View', *The Riots in France*, Social Science Research Council

Schurink, W.J., 1990, 'Victimization: Nature and Trends'. *Human Sciences Research Council*. p 416

Scrivener, L. 2010, 'Angry merchants ask: Why did G20 protesters attack us?' [Online] *Toronto Star*

Seattle Police Department, 2000, 'The Seattle Police Department After Action Report: World Trade Organization Ministerial Conference Seattle, Washington November 29 - December 3, 1999' [Online] Washington

Selwat, W. 2013, 'Detroit's Bankruptcy Reveals Dysfunction Common in Cities' [Online], *Bolomberg-Businessweek*

Shor, F., 2001, 'Floods, Riots, and Other "Natural" Disasters'; April 21, 2001; *Common Dreams*

Simpson, J. 2005 'Will France's curfews work?' [Online] *BBC News*

Shor, F., 2001, 'Floods, Riots, and Other "Natural" Disasters'; April 21, 2001; *Common Dreams*

Spillane, C. 2012, 'Occupy London Movement at St. Paul's Cathedral Cost $1.7 Million' [Online] *Bloomberg-Businessweek*

Stiglitz, Joseph; 2011; 'Of the 1%, by the 1%, for the 1%'; *Vanity Fair*, May 2011.

Stirckland, P. 2010 'Should we build more prisons?' in *Key issues for the new parliament 2010,* UK Parliament, 2010 [online]

Strauss, William; Howe, Neil; 2000, *Millennials Rising: The Next Great Generation*. Vintage Books, New York. ISBN 0-375-70719-0.

Taylor, Astra; Gessen, Keith; 2012; *Occupy!: Scenes from Occupied America*, Verso Books; ISBN-10: 1844679403

Tugwell, P. 2012, 'Rioters Set Fire to 45 Buildings in Athens Austerity Protest' [Online] *Bloomberg-Businessweek*

UNDP, 2004, *Reducing Disaster Risk: A Challenge For Development*, United Nations Development Programme, Bureau for Crisis Prevention and Recovery

Urdal, Henrik. 'A clash of generations? Youth bulges and political violence,' *International Studies Quarterly* 50.3 (2006): 607-629

Van Gelder, Sarah. 2011 *This changes everything: occupy Wall Street and the 99% movement*. San Francisco: Berrett-Koehler Publishers

Walker, D.; 2005, 'Radio captures the horror, exhaustion', *New Orleans Times*

Webster, W.; William, H., et al., 1992, *The City In Crisis: A Report By The Special Advisor To The Board Of Police Commissioners On The Civil Disorder In Los Angeles*, two-volume set (450 pages) ISBN 1-884614-05-1.

Welch, M.; 2005, 'They Shoot Helicopters, Don't They?: How journalists spread rumors during Katrina'. *Reason Online*, December 2005.

Wikipedia, 2005, 'Tulsa Race Riot of 1921'.

Yassin, J.O., 2005, 'Demonizing the Victims of Katrina: Coverage painted hurricane survivors as looters, snipers and rapists'; *FAIR Fairness & Accuracy in Reporting*