Country-wide protests and financial stability

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Abstract

This paper investigates the effect of country-wide protests on financial stability after controlling for inflation rate and the level of political stability. Country-wide protests may pressure a powerful government to listen and meet the demands of relatively less powerful groups, but country-wide protests can be destructive especially when such protests lead to the destruction of the business assets of the clients of financial institutions thereby making it difficult for them to meet their loan repayment and other obligations to financial institutions, and posing risk to the stability of the financial system. Financial stability and country-wide protests data were analysed for the United Kingdom. The empirical results show that bank non-performing loans are higher in country-wide protests years, implying that country-wide protests have a significant negative impact on financial stability through high non-performing loans in years where there are country-wide protests.

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1. Introduction

This paper investigates the impact of country-wide protests on financial stability.

There have been a lot of academic and policy debates on how to preserve financial stability (see, for example, Schinasi, 2005; Nelson and Perli, 2007; Acharya and Richardson, 2009; Aikman et al., 2019). Most arguments in this regard point to improved regulation of financial institutions in the financial system especially systemically-important financial institutions (see, for example, Goodhart, 2005; Hakenes and Schnabel, 2011), and increased monitoring and supervision of on-balance sheet indicators of financial soundness (see, for example, Tabak et al., 2016; Agénor et al., 2018; Ozili and Iorember, 2023). The frequent occurrence of financial crisis demonstrates the need to not only preserve financial stability but to also understand and identify the determinants of financial stability or instability. Scholars such as Stein (2012), Woodford (2012), Creel et al. (2015), Dafermos et al. (2018), Ozili et al. (2022) and Ozili et al. (2023) emphasize the need to identify the external factors that transmit shocks to the financial system particularly off-balance sheet determinants of financial stability. This has led to renewed interest among scholars on the need to identify the pertinent off-balance sheet or external determinants of financial stability.

In the literature, a number of studies have identified climate change (Dafermos et al., 2018; Echeverri-Pimienta et al., 2022), inflation targeting (Woodford, 2012), monetary policy (Stein, 2012) and political stability (Ozili, 2018) as significant off-balance sheet determinants of financial stability. Yet, the debate about financial stability determinants and how to preserve financial stability has not focused on the role of protests in promoting or undermining financial stability. This paper identifies country-wide protests as a potential off-balance sheet determinant of financial stability. This is the first paper to link financial stability to country-wide protests.

In this paper, I argue that there is a relationship between country-wide protests and financial stability. In modern democracies, protest is a tool used to hold institutions and leaders to account for their actions. The right to protest arises from the freedom of assembly which is a fundamental right of every person. Historically, many protests have been peaceful. But most country-wide protests often turn into violent demonstrations and riots leading to unintended losses for businesses through vandalism and looting. Country-wide protests may be good in getting a

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powerful government to listen and meet the demands of relatively less powerful groups, but country-wide protests can be bad for financial stability when the clients of financial institutions are unable to meet their loan repayment and other obligations to financial institutions because clients' businesses were fully or partially destroyed during country-wide protests. The destruction arising from country-wide protests can lead to huge losses, rising loan defaults and loss of revenue to financial institutions, thereby, affecting the stability of individual financial institutions. When such protest persists, it can threaten the stability of the entire financial system. More importantly, country-wide protests may lead to financial crime when angry protesters hold bank staff hostage and extort money from them as a way of expressing their displeasure about the actions of financial institutions. Such behaviour occurs when protesters want to exert social justice against financial institutions that are more concerned about generating huge profits at the expense of the welfare of citizens. Given the potential for country-wide protests to transform into financial crime and also affect financial stability, it is important for financial regulators to take into account the potential effect of country-wide protests on the stability of the financial system when designing macro-prudential regulations for the financial system. Using a unique dataset of country-wide protests in the United Kingdom from 1998 to 2011, the empirical results show that bank non-performing loans are significantly higher in country-wide protests years, implying that country-wide protests have a significant negative impact on financial stability through high non-performing loans.

This study contributes to the literature in the following ways. First, the study contributes to the literature by investigating the impact of country-wide protests on financial stability using a novel dataset on country-wide protests. Second, the study contributes to the finance literature by examining the role of protests in finance, focusing on how protests can potentially affect or disrupt the ability of clients or obligors to meet their financial obligations to one another. This is one of the first papers to explicitly investigate the role of protests in finance. An additional contribution of this study to the literature is that it examines how exogenous factors such as country-wide protests can transmit risk to the financial system, thereby undermining financial stability. The findings of the study show that country-wide protests increase non-performing loans in the financial sector which has an adverse effect on financial stability. Drawing on the

debates on how to preserve financial stability (see e.g. Aikman et al., 2019; Sarlin and Peltonen, 2013; Ozili, 2019a; Allen and Gu, 2018; Ozili, 2021; Wiersema et al., 2023), and the findings of this study, there is a need for policymakers to use dialogue and negotiation with interest groups to reduce the occurrence of country-wide protests.

The rest of the paper is structured as follows. Section 2 presents the theoretical background of the study. Section 3 presents the literature review and develops the hypotheses. Section 4 outlines the research methodology. Section 5 provides the empirical analyses. Section 6 concludes the study.

2. Theory

Turner (1969) defines a protest as a collective act of disruption or violence, leading to different reactions. Often, powerless groups use protest as a political resource to meet their demands. The frequent resort to protest activity by relatively powerless groups suggests that protest is an important aspect of minority group and low income group politics (Lipsky, 1968). Protests have their roots in social movements. There are three social movement theories that explain protest behaviour.

The first theory is the resource mobilisation theory. Resource mobilisation theory views protests as a powerful tool for political action only when protesters have sufficient resources to pressure powerful groups to meet their demands (Morris, 2000; Edwards and McCarthy, 2004). The theory argues that the success of social movements, or protests, depends on the ability of members of the social movement to acquire resources and mobilize people to accomplish the goals of the social movement and evoke political action (Morris, 2000). The theory suggests that groups that have more resources are able to use the resources at their disposal to force powerful groups to meet their demands (Edwards and McCarthy, 2004).

The second theory is the collective action theory. Collective action theory views protests as a way to demand for public goods for the benefit of all (Johnston and Noakes, 2005). The theory views protesters as social agents whose goal is to demand the provision of public goods such as

reducing high price of basic utilities and reducing pollution (Opp, 2001). The protesters themselves do not produce the public good but they pressure others to produce the public good and deliver it to the general public (Opp, 2001; Osborne et al., 2019).

The third theory is the deprivation theory. Deprivation theory states that social movements, or protests, arise when people feel deprived (Messner, 1988; Kleiner, 2018). When people compare themselves to others and feel that one group has more privileges or resources than other groups, they feel that they are at a disadvantage (Walker and Mann, 1987). This can encourage the disadvantaged group to form a social movement either by acting independently or forming an alliance with other disadvantaged groups to put an end to the common deprivation they feel. Most times, the feeling of deprivation is subjective (Veenhoven, 2008). People tend to respond to subjective states of disadvantage which may or may not flow from objective physical and social reality (Veenhoven, 2008). When people are deprived and they do not see a solution in sight to their common deprivation, they will resort to protests and may engage in financial crime by holding the employees of the government or wealthy people hostage and extort money from them as a way to express their displeasure and to signal their common deprivation through their actions (Murray, 1999). Such behaviour constitutes a financial crime even though protesters may justify their actions.

Krastev (2014) argues that protests are unpredictable and such unpredictability is the source of their political effectiveness and also the source of their weakness. This is because governments do not know when people will organize themselves to occupy the streets and possibly vandalize public and private properties, thereby putting the government and wealthy oligarchs in a helpless situation. However, the use of violence leads protest groups to be perceived as less reasonable by the general public and such perception reduces the public's identification with and support for the protest groups (Simpson et al., 2018). The theory also proposes that violence during protests can increase support for groups perceived to be in opposition to the violent groups (Simpson et al., 2018).

3. Literature review and hypothesis development

3.1. Literature review

A small literature examines the impact of insider activism (also known as protest by insiders) on the performance of firms. This literature shows that insider activism has negative consequences for firms. For example, Greenwood and Schor (2009), in a study of portfolio investors from 1993 to 2006, show that firms targeted by investor activists often get acquired. This is because activist investors have the ability to force target firms into a takeover. Chen et al. (2020) show that firms targeted by hedge fund activists experience a greater departure of valuable employees. This implies that hedge fund activism can lead to unwanted loss of human capital which may reduce the performance of targeted firms. David et al. (2007) studied the relationship between shareholder proposal activism, managerial response, and corporate social performance. They find that when shareholders protest about firms' decisions, such protests can lead to a reduction in corporate social performance. This is because managers will use their financial resources to resist external pressures from powerful and salient shareholders in order to retain their discretion. Managers can settle proposals filed by salient shareholders, and such settlement will reduce the firms' corporate social performance because more resources have been spent on retaining managerial discretion than on improving corporate social performance.

Few studies investigate the impact of protests by outsiders on firms and the general economy. For example, Shonchoy and Tsubota (2016) examine the impact of protests on manufacturing firms in Bangladesh using the World Bank enterprise survey data of 2007 and 2013. They find that political protests significantly increased the cost of production for manufacturing firms. They show that strikes or protests lead to a reduction in firm productivity. Richards and Gelleny (2006) show that Argentina witnessed a significant bank failure in December 2001. It led to economic and political turmoil which aggravated into large protests. The turmoil led to a run on bank deposits. This led the government to impose a temporary suspension on access to bank accounts. The government issued a policy that limited cash withdrawals to $250 per week for a period of 90 days and overseas cash transfers were limited to $1000. This policy enraged millions of middle-class and poor Argentines, and led to a large general strike organized by trade unions and

country-wide violent street protests. Consequently, President Adolfo Rodriquez Saa's government was forced to resign. The turn of events led to the near collapse of banks in Argentina.

Other studies focused on social unrest. For instance, Barrett et al. (2020) made an attempt to measure social unrest. They developed a social unrest index based on counts of relevant media reports. They observed that spikes in the index identify major events, which correspond very closely to event timelines from external sources for four major regional waves of social unrest. In another study, Barrett and Chen (2021) argue that pandemics may have social scarring effects and could increase the likelihood of social unrest. In their analysis of social unrest in 130 countries, they find a positive cross-sectional relationship between social unrest and epidemics (or pandemics). This implies that social unrest may be common during epidemics (or pandemics). Barrett et al. (2021) also show that social unrest has a negative impact on stock market performance. They show that an average social unrest episode in a typical country causes a 1.4 percentage point drop in cumulative abnormal returns over a two-week event window and this drop is more pronounced for events that last longer and for events that happen in emerging markets. Hadzi-Vaskov et al. (2023) investigate the macroeconomic impact of social unrest and find that social unrest has an adverse effect on economic activity. Madeira (2022) examines household debt during the period of 'social explosion'. Chile faced two significant macroeconomic shocks in the last quarter of 2019 and during 2020. The first event was the "Social Explosion," in which massive political protests motivated by social demands disrupted economic activities. Madeira (2022) shows that household debt risk increased substantially after the 'social explosion' across all income backgrounds but fell slightly during the COVID-19 pandemic due to the public policies implemented during the pandemic.

In the financial stability literature, Ozili (2019a) investigates the impact of social activism on financial system stability. Social activism was analysed using gender equality advocacy, environmental sustainability advocacy, and social protection advocacy indicators. The study shows that gender equality and environmental sustainability advocacy had a significant positive effect on financial stability while social protection advocacy had a significant negative effect on financial stability. Several studies in the financial stability literature have used several proxies to

measure financial stability such as the non-performing loans ratio (Kasman and Kasman, 2015; Noman et al., 2017), insolvency risk index (Chiaramonte et al., 2015; Creel et al., 2015), cost efficiency (Pessarossi and Weill, 2015), return on assets (Xu et al., 2019) and a financial stability index (Ozili and Iorember, 2023). Several financial and non-financial determinants of financial stability have also been identified in the literature. The financial determinants of financial stability, include cost efficiency (Podpiera and Weill, 2008; Pessarossi and Weill, 2015), regulation (Goodhart, 2005), capital adequacy (Thakor, 2014). The non-financial determinants of financial stability include competition (Martinez-Miera and Repullo, 2010), political stability (Ozili, 2018), central bank transparency (Horváth and Vaško, 2016), social activism (Ozili, 2019a), central bank independence (Klomp and De Haan, 2009), and competence of central bank governors (Ozili, 2020). Meanwhile, in the financial stability literature, there is little focus on the effect of social factors on financial stability. Specifically, the effect of protests on financial stability have not been examined in the literature. This is surprising given the overwhelming evidence that violent protests can damage the asset of clients of financial institutions in the financial system.

3.2. Hypotheses development

Drawing on the findings of Richards and Gelleny (2006) and Shonchoy and Tsubota (2016), I argue that country-wide protests are more likely to be disruptive than local protests because protesters in a country-wide protests are difficult to control, and the disruption caused by country-wide protests can stifle economic activities in a country, making it difficult for economic agents to conduct business during the protest period. The effect on businesses will be felt by financial institutions when affected businesses are unable to meet loan repayments and other financial obligations to financial institutions. The disruption will not only affect the clients of financial institutions, it will also increase loan defaults, increase cost and lower the expected revenue or profit of financial institutions in the protest year, thereby lowering financial stability. Following this argument, I predict that country-wide protests will make the financial system less stable.

H0: The financial system is less stable in country-wide protests years

H1: The financial system is more stable in country-wide protests years.

4. Research methodology

4.1. Data

The country analysed in this study is the United Kingdom. The United Kingdom was selected because it is a leading democratic society and has a track record of preserving citizen's right to protest. Compared to other countries, the United Kingdom does not suppress people's freedom to protest against social, economic or political issues (Klug et al., 2003).

Country-wide protests data were collected from the 'Guardian data on major UK protest' as shown in table 1. Industry-wide financial stability, macroeconomic and institutional data were collected from the global financial development indicators, worldwide governance indicators and the world development indicators of the World Bank. Inflation data were obtained from the World development indicators while the index of political stability and absence of violence/terrorism data were obtained from the worldwide governance indicators. Data were collected from 1998 to 2011. The reason for choosing a narrow sample period is because accurate data on country-wide protests are available only from 1998 to 2011. As a result, the financial stability data were also collected for the same period in order to match the protest data with the financial stability data. The country-wide protests data is reported in table 1 while table 2 reports the description and source of the variables.

Table 1. The UK Country-wide Protests Data

Year	Name of protest	Cause / Issue	Organizers	Violent?	Number of protesters	Number of police deployed
1990	Poll tax	Poll tax	All Britain anti-Poll Tax Federation	Yes	200,000	40,000
2001	May day protest	Globalization	Various groups	Yes	10,000	5,000
2001	Stop the war	Afghanistan	Various groups	No	100,000	15,000
2002	Liberty & Livelihood	Liberty & Livelihood	Countryside Alliance	No	407,791	400,000
2003	Stop the War (twice in the year)	Iraq War	Stop the War coalition	No	2,100,000	800,000
2009	March for Jobs, Justice & Climate	G20	Put People First	Yes	35,000	13,000[1]
2010	Fund Our Future: Stop Education Cuts	Education cuts	National Union of Students	No	52,000	30,000
2010	Tuition fees protest, Parliament Square	Tuition fees	National Union of Students, University of London Union; National Campaign Against Fees and Cuts (NCAFC)	Yes	30,000	15,000
2011	March for the Alternative	planned public spending cuts by government	Trades Union Congress	Yes	400,000	250,000

Source: The Guardian data on major UK protest.

https://www.theguardian.com/news/datablog/2011/mar/28/demonstrations-protests-uk-list

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[1] Policing of the G20 Summit 2009. A Metropolitan Police Authority.
https://www.statewatch.org/media/documents/news/2009/apr/uk-met-police-authority-report-on-g20-protests.pdf

Table 2. Variable description and source

Variable	Description	Source
FS	FS is a vector of dependent variables namely: the ZSCORE, NPL ratio, COST and ROA.	World Bank, Global financial development indicators
NPL	Ratio of bank non-performing loans to gross loans	World Bank, Global financial development indicators
COST	Ratio of bank overhead costs to total assets	World Bank, Global financial development indicators
ROA	Bank return on assets (after tax)	World Bank, Global financial development indicators
ZSCORE	Bank insolvency risk. Higher the ZSCORE means lower insolvency risk and greater financial stability	World Bank, Global financial development indicators
NOP	Logarithm of the total number of protesters in a country-wide protest.	Guardian Data on Major UK protests
VL	Binary variable that equals one if the protest turned violent, and zero if the protest was non-violent.	Author computation
POL	Logarithm of the total number of police deployed during a country-wide protest.	Guardian Data on Major UK protests
PROTEST	Binary variable that equals one if a country-wide protest occurred in the year, and zero otherwise.	Author computation
INF	Inflation rate	World development indicators
PS	Index of political stability and absence of violence/terrorism.	Worldwide Governance Indicators

4.2. Model

The models used to investigate the impact of country-wide protests on financial stability are specified below.

$$FS_t = \beta_0 + \beta_1(PROTEST)_t + \beta_2 INF_t + \beta_3 PS_t + \epsilon_t \ldots\ldots\ldots\ldots\ldots \quad (1)$$

$$FS_t = \beta_0 + \beta_1(POL*VL)_t + \beta_2 INF_t + \beta_3 PS_t + \epsilon_t \ldots\ldots\ldots\ldots\ldots. (2)$$

$$FS_t = \beta_0 + \beta_1(NOP*POL)_t + \beta_2 INF_t + \beta_3 PS_t + \epsilon_t \ldots\ldots\ldots\ldots\ldots. (3)$$

Where ϵ = error term. t = year. The variables in the models are defined in table 2 below.

4.3. Variable justification

Four indicators of financial stability were used in this study, namely, the bank Z-score (ZSCORE), non-performing loans to gross loans ratio (NPL), bank overhead costs to total assets ratio (COST) and bank return on assets (ROA). These four variables are widely used as indicators of financial stability in the financial stability literature (see, for example, Rajan and Dhal, 2003; Ozili, 2019b; Fu et al., 2014; Ozili, 2018; Kim et al., 2020; Ozili and Iorember, 2023; Ozili, 2023).

For the purpose of this study, a country-wide protest is defined as an action by a large group of people expressing disapproval or objection to decisions taken by an authority usually a government and where such action causes a significant disruption in societal activities during a period of time. Depending on the nature, size and organization of the protest, a protest can transform into a riot or a peace demonstration (Geschwender, 1968; Sinclair, 2020).

Four variables were used to capture the characteristics of country-wide protests in the United Kingdom. A binary variable, 'PROTEST', was introduced to capture whether a country-wide protest occurred in a given year. The 'PROTEST' binary variable equals one if a country-wide protest occurred in the year, and zero otherwise. The second variable is the 'NOP' variable which captures the number of protesters participating in a country-wide protest. A third variable 'POL' was introduced to capture the number of police officers deployed to a country-wide protest to

prevent a breakdown to law and order during a country-wide protest. Finally, a binary variable, 'VL', was introduced to capture whether a country-wide protest turned violent or non-violent.

The inflation variable (INF) was introduced as a macroeconomic determinant of financial stability. Several studies show that high levels of inflation can reduce the real interest rate, and can depress the profitability of financial institutions especially lending institutions, thereby making them less stable (Schwartz, 1998; Woodford, 2012; Fazio et al., 2018); therefore, a negative relationship between inflation and financial stability is expected. Also, the index of political stability and absence of violence/terrorism (PS) variable was introduced as an institutional and/or governance determinant of financial stability. Studies show that political stability and absence of terrorism leads to trust in the monetary and financial system which promotes financial stability (see, for example, Ozili, 2018; Donnelly, 2014); therefore, a positive relationship between political stability and financial stability is expected.

Finally, the models are estimated using the ordinary least square regression estimation and applying the robust heteroscedasticity and autocorrelation consistent (HAC) standard errors for robustness purposes. Robustness tests were also conducted using the Arellano-Bond Generalized Method of Moments (GMM) regression and the two stage least squares (2SLS) regression estimation methods.

4.4. Descriptive statistics

4.4.1. Comparing the protest year, non-protest year and full period sub-samples

The result is reported in table 3. The standard deviation of the NPL variable in the protest year subsample is very low (0.69) compared to NPL in the non-protest year subsample (0.93). This suggests that there is little variation in the non-performing loan ratio of banks in protest years than in non-protest years. The standard deviation of the COST variable in the protest year subsample is high at 1.23 compared to the non-protest year subsample at 0.82. This suggests that there is wider variation in the overhead cost of the banking sector in protest years than in non-protest years. Also, the standard deviation of the ZSCORE variable in protest years is high at 5.72 compared to non-protest years at 3.07. This suggests that there is a wide variation in the stability of the banking sector in protest years than in non-protest years. Meanwhile, there is no

variation in banking sector ROA in both the protest year and non-protest year subsamples as the standard deviation is the same at 0.53.

Table 3. Descriptive statistics: Protest, non-protest and full sample categories					
Protest Years	Statistic	NPL	COST	ROA	ZSCORE
	Mean	3.18	1.63	0.46	11.52
	Median	3.05	1.48	0.37	11.12
	Maximum	3.96	3.13	1.16	18.89
	Minimum	2.50	0.36	-0.04	5.23
	Std. Dev.	0.69	1.23	0.53	5.72
	Observations	6	6	6	6
Non-Protest Years	Statistic	NPL	COST	ROA	ZSCORE
	Mean	1.87	1.86	0.88	8.48
	Median	1.75	1.71	0.71	8.41
	Maximum	3.20	3.39	1.89	12.42
	Minimum	0.90	0.87	0.12	3.96
	Std. Dev.	0.93	0.82	0.53	3.07
	Observations	8	8	8	8
Full sample	Statistic	NPL	COST	ROA	ZSCORE
	Mean	2.43	1.77	0.71	9.78
	Median	2.55	1.71	0.69	8.75
	Maximum	3.96	3.39	1.89	18.89
	Minimum	0.90	0.36	-0.04	3.96
	Std. Dev.	1.05	0.98	0.55	4.48
	Observations	14	14	14	14
List of variables: ZSCORE = Bank Z-score. NPL = ratio of bank non-performing loans to gross loans. COST = ratio of bank overhead costs to total assets. ROA = ratio of bank return on assets.					

4.4.2. Average values of the financial stability indicators: protest vs non-protest years

Table 4 and figure 1 show that, on average, NPL is highest in protest years than in non-protest years. It also shows that the operating profitability (i.e. ROA) of the banking sector is lowest in protest years compared to non-protest years. This indicates that the non-performing loans and profitability of banks are adversely affected by country-wide protests. Meanwhile, overhead costs (i.e. COST) and insolvency risk are lower in non-protest years than in protest years.

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Table 4. Mean values of financial stability indicators				
	NPL	COST	ROA	ZSCORE
Non-Protest years	1.88	1.87	0.88	8.49
Protest years	3.19	1.64	0.47	11.52
Total years	2.43	1.77	0.71	9.79
List of variables: ZSCORE = Bank Z-score. NPL = ratio of bank non-performing loans to gross loans. COST = ratio of bank overhead costs to total assets. ROA = ratio of bank return on assets.				

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Figure 1: Financial stability indicators (1998 - 2011)
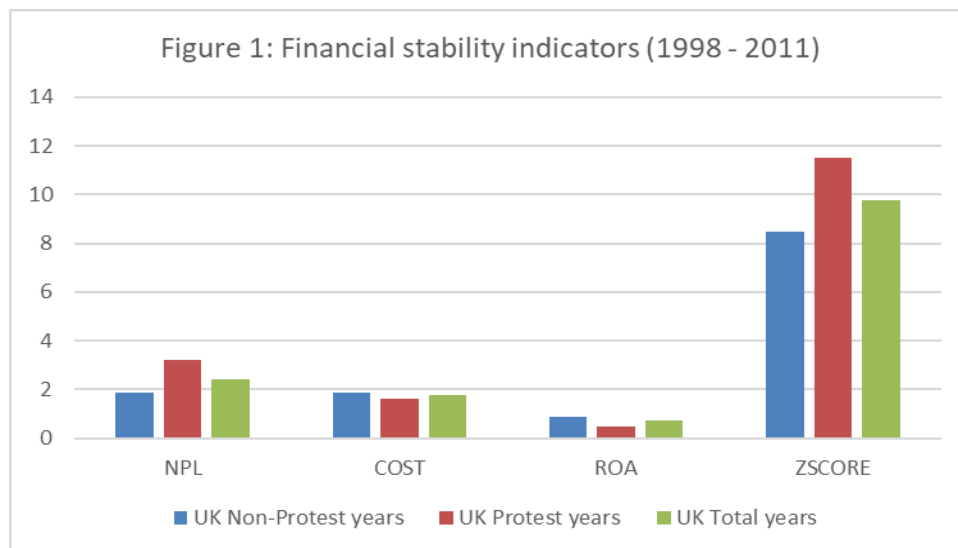
4.5. Pearson correlation analysis

4.5.1. Full period analysis

The full sample correlation result is reported in table 5. The PROTEST variable is statistically significant and positively correlated with non-performing loans at 63.7%. This means that country-wide protests are associated with higher non-performing loans in the banking sector by 63.7%. Meanwhile, there is a statistically insignificant correlation between the PROTEST variable and the COST, ROA and ZCORE variables.

Table 5. Pearson correlation: Full sample analysis

Variables	NPL	COST	ROA	ZSCORE	PROTEST	PS	INF
NPL	1.000						

COST	-0.173	1.000					
	(-0.61)	-----					
	((0.55))	-----					
ROA	-0.337	0.879***	1.000				
	(-1.24)	(6.38)	-----				
	((0.23))	((0.00))	-----				
ZSCORE	0.173	0.754***	0.580**	1.000			
	(0.61)	(3.98)	(2.46)	-----			
	((0.55))	((0.00))	((0.02))	-----			
PROTEST	0.637**	-0.119	-0.38	0.347	1.000		
	(2.86)	(-0.42)	(-1.44)	(1.28)	-----		
	((0.01))	((0.68))	((0.17))	((0.22))	-----		
PS	0.170	0.113	0.206	-0.148	-0.578	1.000	
	(0.59)	(0.39)	(0.73)	(-0.51)	(-2.45)	-----	
	(0.56))	((0.69))	((0.47))	((0.61))	((0.03)	-----	
INF	0.059	-0.670***	-0.71***	-0.692***	0.031	-0.091	1.000
	(0.21)	(-3.12)	(-3.51)	(-3.32)	(0.10)	(-0.32)	-----
	((0.84))	((0.00))	((0.00))	((0.00))	((0.91))	((0.75))	-----

T-statistics are reported in single parenthesis. P-values are reported in double parenthesis. ***, **, * denotes statistical significance at the 1%, 5% and 10%.

4.5.2. Pearson correlation: Protest year category

The correlation result for the protest year subsample is reported in table 6. The NOP variable is significant and positively correlated with ROA and ZSCORE at 74.2% and 73.2% respectively. This suggests that the size of protesters in a country-wide protest is positively correlated with profitability (ROA) and solvency (ZSCORE) in the banking sector. The VL variable is significant and negatively correlated with COST, ROA and ZSCORE. This suggests that violent country-wide protests (VL) are associated with lower profitability (ROA) and low solvency (ZSCORE) in the banking sector.

Table 6. Pearson correlation: Protest years

Variable	NPL	COST	ROA	ZSCORE	POL	NOP	VL	PS	INF
NPL	1.000								

COST	-0.913**	1.000							
	(-4.49)	-----							
	((0.01))	-----							
ROA	-0.927***	0.980***	1.000						
	(-4.97)	(9.89)	-----						
	((0.00))	((0.00))	-----						
ZSCORE	-0.919***	0.966***	0.991***	1.000					
	(-4.69)	(7.53)	(15.67)	-----					
	((0.00))	((0.00))	((0.00))	-----					
POL	-0.419	0.713	0.714	0.695	1.000				
	(-0.92)	(2.03)	(2.04)	(1.93)	-----				
	((0.41))	((0.11))	((0.11))	((0.12))	-----				
NOP	-0.464	0.697	0.742*	0.732*	0.972***	1.000			
	(-1.05)	(1.94)	(2.21)	(2.15)	(8.31)	-----			
	((0.35))	((0.12))	((0.09))	((0.09))	((0.00))	-----			
VL	0.704	-0.853**	-0.856**	-0.794*	-0.790*	-0.766*	1.000		
	(1.98)	(-3.27)	(-3.31)	(-2.61)	(-2.57)	(-2.38)	-----		
	((0.11))	((0.03))	((0.02))	((0.05))	((0.06))	((0.07))	-----		
PS	0.927***	-0.901**	-0.921***	-0.884**	-0.504	-0.527	0.875**	1.000	
	(4.95)	(-4.15)	(-4.75)	(-3.79)	(-1.16)	(-1.24)	(3.61)	-----	
	((0.00))	((0.01))	((0.00))	((0.01))	((0.31))	((0.28))	((0.02))	-----	
INF	0.846	-0.651	-0.689	-0.672	-0.039	-0.098	0.554	0.875**	1.000
	(3.17)	(-1.71)	(-1.90)	(-1.81)	(-0.07)	(-0.19)	(1.33)	(3.62)	-----
	(0.03))	((0.16))	((0.12))	((0.14))	((0.94))	((0.85))	((0.25))	((0.02))	-----

T-statistics are reported in single parenthesis. P-values are reported in double parenthesis. ***, **, * denotes statistical significance at the 1%, 5% and 10%.

5. Empirical Results

5.1. Full sample analysis

Here, I test the effect of country-wide protests on each indicator of financial stability using the multivariate model below.

$$FS_t = \beta_0 + \beta_1(PROTEST)_t + \beta_2 INF_t + \beta_3 PS_t + \epsilon_t \dots\dots\dots\dots\dots. \quad (1)$$

The 'PROTEST' variable is a dummy variable that take the value of one in a protest year and zero otherwise. In the data, the protest years are 2001, 2002, 2003, 2009, 2010 and 2011. The FS variable is a vector of financial stability indicators, namely, NPL, COST, ROA and ZSCORE.

The results are reported in table 7 below. The PROTEST coefficient is statistically significant and positively related to NPL in column 1. This indicates that bank non-performing loans are higher in country-wide protests years. The PROTEST coefficient is statistically significant and negatively related to ROA in column 3. This indicates that bank profitability is lower in country-wide protests years. Meanwhile, the PROTEST coefficient is statistically insignificant in columns 2 and 4, hence, no meaningful conclusion can be drawn.

	(1)	(2)	(3)	(4)
Table 7. OLS univariate regression: full sample (1998-2011)				
	Dependent variable: NPL	Dependent variable: COST	Dependent variable: ROA	Dependent variable: ZSCORE
	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)
Bo	-0.290	3.599***	2.035***	16.711***
	(-0.87)	(3.89)	(4.18)	(5.34)
PROTEST	2.282***	-0.196	-0.457**	3.239
	(8.03)	(-0.40)	(-2.57)	(1.40)
INF	0.132*	-0.827**	-0.495**	-3.974***
	(1.81)	(-3.12)	(-3.10)	(-4.11)
PS	3.078***	-0.021	-0.201	0.037
	(7.37)	(-0.03)	(-0.68)	(0.01)
Adjusted R²	80.97	29.65	54.03	50.05

The results are estimated using OLS regression and applying robust heteroscedasticity and autocorrelation consistent (HAC) Newey-West standard errors. ***, ** and * denote significance at the 5% and 10% levels. ZSCORE = Bank Z-score. NPL = ratio of bank non-performing loans to gross loans. COST = ratio of bank overhead costs to total assets. ROA = ratio of bank return on assets. PROTEST = binary variable that equal one if a country-wide protest occurred in the year, and zero otherwise. INF = inflation rate. PS = index of political stability and absence of violence/terrorism

5.2. Further analysis

5.2.1. Effect of police presence during violent protests on financial stability

Here, I test the effect of police presence (POL) during violent protest (VL) on financial stability. Using the protest years' data subsample, I test whether the presence of more police officers during violent country-wide protests increase financial stability or lead to greater financial instability. To do this, I interact the POL and VL variables and assess their combined impact on the four financial stability variables, as shown in the model below.

$$FS_t \ = \ \beta0 + \beta1 \ (POL * VL)t + \beta2INF_t + \ \beta3PS_t + \epsilon \ t \dots \dots \dots \dots \dots . (2)$$

The results are reported in table 8 below. The POL*VL coefficient is statistically significant in columns 1 to 4. The POL*VL coefficient is statistically significant and negatively related to NPL. This indicates that the presence of more police officers during violent country-wide protests reduced the size of non-performing loans in financial institutions. This implies that the presence of police officers helped to prevent the destruction of the assets of businesses who are clients of financial institutions, and this led to greater financial stability. Also, the POL*VL coefficient is statistically significant and positively related to ROA and ZSCORE in column 3 and 4. This indicates that the presence of more police officers during violent country-wide protests improved financial stability through greater profitability and low insolvency risk. This implies that the presence of more police officers during a violent protest prevented the destruction of the assets of businesses who are clients of financial institutions, and this ensured that the profitability and solvency of financial institutions were unaffected by the protests, thereby improving financial stability.

	(1)	(2)	(3)	(4)
Table 8. OLS regression: Protest years subsample				
	Dependent variable: NPL	Dependent variable: COST	Dependent variable: ROA	Dependent variable: ZSCORE
	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)
Bo	1.483*** (45.44)	4.102*** (21.88)	1.561*** (36.74)	23.673*** (37.13)
POL*VL	-0.366** (-7.48)	0.556*** (11.54)	0.228** (9.01)	3.233** (6.33)
INF	-0.471* (-3.04)	1.657*** (10.25)	0.644** (9.07)	7.800** (5.21)
PS	12.960** (7.44)	-26.004*** (-15.42)	-10.692*** (-12.66)	-130.794** (-7.49)
Adjusted R²	96.69	95.63	97.33	92.47

The results are estimated using OLS regression and applying robust heteroscedasticity and autocorrelation consistent (HAC) Newey-West standard errors. ***, ** and * denote significance at the 5% and 10% levels. ZSCORE = Bank Z-score. NPL = ratio of bank non-performing loans to gross loans. COST = ratio of bank overhead costs to total assets. ROA = ratio of bank return on assets. INF = inflation rate. PS = index of political stability and

absence of violence/terrorism. POL = number of police officers deployed to a protest. VL variable is a binary variable that equals one if a country-wide protest turned violent and zero otherwise, representing a year when country-wide protest turned violent.

5.2.2. Combined effect of large police presence and large number of protesters on financial stability

In this section, I test the combined effect of large police presence and large number of protesters on financial stability. Using the protest years' data subsample, I test whether the presence of more police officers and more protesters during country-wide protests lead to greater financial stability. To do this, I interact the NOP and POL variables and assess their combined impact on the four financial stability variables, as shown in the model below.

$$FSt \ = \ \beta0 + \beta1 \, (NOP * POL)t + \beta2INFt + \ \beta3PSt + \epsilon \, t \ldots \ldots \ldots \ldots \ldots . (3)$$

The results are reported in table 9 below. The NOP*POL coefficient is statistically significant and positively related to ROA and ZSCORE in columns 3 and 4. This indicates that the presence of more police officers and more protesters lead to greater financial stability through greater profitability and low insolvency risk. This implies that the presence of more police officers prevented protesters from destroying the assets of businesses who are clients of financial institutions, and this ensured that the profitability and solvency of financial institutions were unaffected by the actions of protesters, thereby improving financial stability.

	(1)	(2)	(3)	(4)
	Dependent variable:	Dependent variable:	Dependent variable:	Dependent variable:
	NPL	COST	ROA	ZSCORE
	Coefficient	Coefficient	Coefficient	Coefficient
	(t-statistic)	(t-statistic)	(t-statistic)	(t-statistic)
Bo	2.244	3.385	0.038	0.137
	(2.69)	(2.24)	(0.11)	(8.90)
NOP*POL	-0.015	0.008	0.044*	0.692*
	(-0.41)	(0.15)	(3.01)	(3.15)
INF	0.286	0.679	-0.239	-5.505
	(0.34)	(0.76)	(-0.72)	(-1.28)
PS	2.495	-11.456	-0.916	13.958
	(0.42)	(-2.01)	(-0.43)	(0.51)
Adjusted R^2	66.75	73.15	84.95	73.81

Table 9. OLS regression: Protest years subsample

The results are estimated using OLS regression and applying robust heteroscedasticity and autocorrelation consistent (HAC) Newey-West standard errors. ***, ** and * denote significance at the 5% and 10% levels. ZSCORE = Bank Z-score. NPL = ratio of bank non-performing loans to gross loans. COST = ratio of bank overhead costs to total assets. ROA = ratio of bank return on assets. INF = inflation rate. PS = index of political stability and absence of violence/terrorism. POL = number of police officers deployed to a country-wide protest. NOP = the number of protesters in a country-wide protest.

5.3. Robustness test

To control for potential endogeneity, GMM regression and two-stage least squares regression estimations were conducted. The two regression estimations were also conducted to verify whether the OLS regression estimation results are robust with the GMM and 2SLS results. The results are reported in tables 10, 11 and 12 below. Table 10 reports the GMM and 2SLS results for the effect of country-wide protests on financial stability. The PROTEST coefficient is statistically significant and positively related to NPL in columns 1 and 2 in table 10. This indicates that bank non-performing loans are higher in country-wide protests years. This confirms that the earlier result is robust. Meanwhile, the PROTEST coefficient is insignificant in relation to ROA,

COST and ZSCORE. Also, in the protest year sub-sample analysis, the NOP*POL and POL*VL coefficients are mostly insignificant in tables 11 and 12 respectively, and are therefore not robust.

Table 10. Robustness checks: GMM and Two-Stage Least Squares univariate regression

(full sample results: 1998-2011)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	NPL: GMM	NPL: 2SLS	COST:GMM	COST: 2SLS	ROA:GMM	ROA: 2SLS	ZSCORE:GMM	ZSCORE:2SLS
	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
	(t-statistic)	(t-statistic)	(t-statistic)	(t-statistic)	(t-statistic)	(t-statistic)	(t-statistic)	(t-statistic)
Bo	-0.929*	1.747	7.211**	7.748	4.307*	3.419	19.626***	27.954
	(-2.22)	(-1.34)	(2.34)	(1.28)	(1.99)	(1.21)	(4.30)	(1.38)
PROTEST	2.548***	2.699***	0.549	0.461	-0.134	0.101	5.967*	5.178
	(6.32)	(3.80)	(0.33)	(0.22)	(-0.13)	(0.11)	(1.77)	(0.69)
INF	0.376*	0.522	-1.993**	-2.134	-1.230*	-1.020	-5.836***	-8.437
	(2.27)	(1.63)	(-2.37)	(-1.34)	(-1.92)	(-1.32)	(-5.04)	(-1.56)
PS	2.892***	4.003**	-3.497	-3.932	-2.163	-1.415	-0.006	-6.139
	(3.52)	(2.63)	(-1.02)	(-0.71)	(-1.11)	(-0.59)	(-0.001)	(-0.32)
Adjusted R^2	74.79	63.44	-2.467	-299.47	2.375	-130.80	22.50	-60.57
J-statistic	1.101	0.0001	0.017	0.0003	0.311	0.0002	0.43	0.0003
P(J-statistic)	0.294	0.012	0.89	0.61	0.57	0.53	0.51	0.35

GMM instruments are the one-year lag of the dependent variable and explanatory variables. 2SLS instruments are the one-year lag of the explanatory variables. ***, ** and * denote significance at the 5% and 10% levels. ZSCORE = Bank Z-score. NPL = ratio of bank non-performing loans to gross loans. COST = ratio of bank overhead costs to total assets. ROA = ratio of bank return on assets. PROTEST = binary variable that equal one if a country-wide protest occurred in the year, and zero otherwise. INF = inflation rate. PS = index of political stability and absence of violence/terrorism

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	NPL:GMM	NPL:2SLS	COST:GMM	COST:2SLS	ROA:GMM	ROA:2SLS	ZSCORE:GMM	ZSCORE:2SLS
	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
	(t-statistic)	(t-statistic)	(t-statistic)	(t-statistic)	(t-statistic)	(t-statistic)	(t-statistic)	(t-statistic)
Bo	2.056	3.759	4.454*	6.358	0.307*	0.405	4.580	10.108
	(4.31)	(0.73)	(8.36)	(1.10)	(11.18)	(1.36)	(2.96)	(0.60)
NOP*POL	0.002	-0.061	-0.043	-0.113	0.030**	0.026	0.472*	0.270
	(0.09)	(-0.34)	(-2.21)	(-0.56)	(29.92)	(2.56)	(8.35)	(0.46)
INF	-0.207	0.624	1.778	2.706	0.093	0.141	-0.594	2.102
	(-0.65)	(0.29)	(5.04)	(1.11)	(5.10)	(1.12)	(-0.58)	(0.29)
PS	5.513	-0.504	-18.865*	-23.586	-3.101**	-3.447	-18.806	-38.326
	(2.42)	(-0.03)	(-7.41)	(-1.39)	(-23.62)	(-3.62)	(-2.55)	(-0.71)
Adjusted R²	0.917	68.88	97.15	89.21	99.95	99.84	98.82	95.55
J-statistic	1.47	0.0008	1.47	0.0009	1.47	0.0002	1.47	0.0002
P(J-statistic)	0.225		0.225		0.225		0.225	

Table 11. GMM and 2SLS regression: Protest years subsample

GMM instruments are the one-year lag of the dependent variable and explanatory variables. 2SLS instruments are the one-year lag of the explanatory variables. ***, ** and * denote significance at the 5% and 10% levels. ZSCORE = Bank Z-score. NPL = ratio of bank non-performing loans to gross loans. COST = ratio of bank overhead costs to total assets. ROA = ratio of bank return on assets. PROTEST = binary variable that equal one if a country-wide protest occurred in the year, and zero otherwise. INF = inflation rate. PS = index of political stability and absence of violence/terrorism

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Table 12. GMM and 2SLS regression: Protest years subsample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	NPL:GMM	NPL:2SLS	COST:GMM	COST:2SLS	ROA:GMM	ROA:2SLS	ZSCORE:GMM	ZSCORE:2SLS
	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
	(t-statistic)	(t-statistic)	(t-statistic)	(t-statistic)	(t-statistic)	(t-statistic)	(t-statistic)	(t-statistic)
Bo	1.324	0.460	0.582	0.367	2.303	1.752	33.952	23.360
	(1.51)	(0.26)	(2.66)	(0.83)	(4.12)	(1.55)	(3.15)	(1.07)
POL*VL	-0.461	-0.940	-1.567	-1.686*	0.675	0.370	9.443	3.565
	(-0.86)	(-0.96)	(-11.74)	(-6.94)	(1.98)	(0.59)	(1.44)	(0.29)
INF	-0.555	-1.038	0.029	-0.091	0.980	0.672	12.412	6.478
	(-1.11)	(-1.34)	(0.24)	(-0.47)	(3.09)	(1.37)	(2.03)	(0.68)
PS	14.981	25.951	17.634	-20.369	-19.850	-12.867	-257.558	-123.029
	(1.29)	(1.27)	(6.10)	(-3.99)	(-2.69)	(-0.99)	(-1.81)	(-0.49)
Adjusted R^2	93.82	86.73	99.89	99.77	96.26	91.97	87.39	72.94
J-statistic	1.47	0.0001	1.47	0.0001	1.47	0.0005	1.47	0.0002
P(J-statistic)	0.225		0.225		0.225		0.225	

GMM instruments are the one-year lag of the dependent variable and explanatory variables. The 2SLS instruments are the one-year lag of the explanatory variables. ***, ** and * denote significance at the 5% and 10% levels. ZSCORE = Bank Z-score. NPL = ratio of bank non-performing loans to gross loans. COST = ratio of bank overhead costs to total assets. ROA = ratio of bank return on assets. PROTEST = binary variable that equal one if a country-wide protest occurred in the year, and zero otherwise. INF = inflation rate. PS = index of political stability and absence of violence/terrorism

5.4. Controlling for the effect of the global financial crisis

Finally, I control for the effect of the 2007-2008 global financial crisis. The DC variable was introduced into the model as an additional control variable to determine whether the result would change after controlling for the global financial crisis event. The DC variable is a binary variable that equal 1 for the 2007 and 2008 years and zero otherwise. The result is reported in column 2 of table 13. I also control for the post-financial crisis period by introducing the PC variable into the model as an additional control variable to determine whether the result would change after controlling for the post- financial crisis period. The result is reported in column 1 of

table 13. Please note that it was impossible to conduct the PROTEST*DC or PROTEST*PC interaction analyses because the individual binary variables (PROTEST, DC and PC) in the interaction variables were perfectly collinear, hence the estimation breaks down. This explains why the DC and PC variables were introduced as additional variables into the model rather than as interaction variables. Also, the short sample period constrained me from undertaking a more extended analysis.

The result in column 2 of table 13 shows that the PROTEST coefficient remains statistically significant and positively related to NPL in column 1 even after controlling for the DC variable which represents the period during the global financial crisis. This indicates that bank non-performing loans are higher in country-wide protests years. The implication of this result is that non-performing loans are higher in protest years even after controlling for the global financial crisis and other factors. Also, the result in column 1 of table 13 shows that the PROTEST coefficient remains statistically significant and positively related to NPL in column 1 even after controlling for the post-financial crisis period. This indicates that bank non-performing loans are higher in country-wide protests years even in the absence of a financial crisis. Meanwhile, the PROTEST coefficient reports mixed statistical significance in the results in columns 3 to 8 of table 13.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Table 13. 2SLS regression: full sample (1998-2011) controlling for the financial crisis period								
	Dependent variable: NPL	Dependent variable: NPL	Dependent variable: COST	Dependent variable: COST	Dependent variable: ROA	Dependent variable: ROA	Dependent variable: ZSCORE	Dependent variable: ZSCORE
	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)
Bo	0.286	-0.873	1.807**	3.867***	1.634**	2.223***	8.568**	16.336***
	(0.68)	(-1.99)	(2.00)	(3.91)	(2.29)	(4.72)	(2.56)	(4.85)
PROTEST	1.841***	3.022***	1.173**	-0.536	-0.151	-0.696	9.458***	3.714
	(5.50)	(6.96)	(2.72)	(-0.72)	(-0.45)	(-1.74)	(4.53)	(1.07)
INF	-0.032	-0.118	-0.316	-0.712**	-0.380*	-0.414*	-1.651	-4.135***
	(-0.23)	(-0.95)	(-1.10)	(-2.26)	(-1.73)	(-1.94)	(-1.57)	(-2.99)
PS	2.694***	4.333***	1.167*	-0.600	0.065	-0.606	5.440**	0.843
	(6.09)	(7.76)	(1.90)	(-0.55)	(0.14)	(-1.02)	(2.97)	(0.19)
PC	0.654**		-2.032***		-0.454		-9.232***	
	(2.58)		(-4.69)		(-1.24)		(-4.16)	
DC		1.315***		-0.607		-0.425		0.846
		(2.79)		(-1.03)		(-0.87)		(0.31)
Adjusted R²	82.29	87.50	59.98	23.94	54.93	52.19	82.47	61.72

The results are estimated using 2SLS regression estimator. ***, ** and * denote significance at the 5% and 10% levels. ZSCORE = Bank Z-score. NPL = ratio of bank non-performing loans to gross loans. COST = ratio of bank overhead costs to total assets. ROA = ratio of bank return on assets. PROTEST = binary variable that equal one if a country-wide protest occurred in the year, and zero otherwise. INF = inflation rate. PS = index of political stability and absence of violence/terrorism. PC = binary variable representing the post-financial crisis period. The PC binary variable equals one for the year 2009, 2010 and 2011, and zero otherwise. DC = binary variable representing the financial crisis period. The DC binary variable equals one for the year 2007 and 2008 and zero otherwise

6. Conclusion

This paper examined the effect of country-wide protests on financial stability. In the paper, I argued that country-wide protests can have damaging effects on financial stability. It can lead to the destruction of the business of clients of financial institutions, making it difficult for the affected clients to meet their loan repayment and other obligations to financial institutions in the financial sector. This can make financial institutions lose revenue, and can also give rise to non-performing loans and losses if the affected clients are unable to repay their debt due to the damage they suffered during country-wide protests.

The empirical results show that bank non-performing loans are higher in country-wide protests years. The results show overwhelming evidence that country-wide protests have a negative impact on the stability of the financial system through high non-performing loans in years where there are country-wide protests.

The implication of the findings is that country-wide protest is a significant determinant of financial stability. Therefore, financial sector regulators should encourage lawmakers to formulate laws that promote and enable the peaceful resolution of societal and political grievances before they escalate into country-wide protests. This will help to minimise the occurrence of country-wide protests and mitigate their effect on the financial system. Also, policymakers should use dialogue and negotiation with interest groups to reduce the occurrence of country-wide protests. Financial sector regulators should also require financial institutions to incorporate 'country-wide protest' as a 'social risk factor' in their risk management models and stress testing models so that financial institutions can take proactive steps to protect themselves from losses arising from country-wide protests.

One limitation of the study is that the study only focused on country-wide protests. The study did not consider smaller protests, such as protests in small towns, suburbs or communities, due to lack of usable data. Another limitation of the study is that the study did not examine the effect of small protests on the stability of financial institutions located in small cities, towns or suburbs. Another limitation of the study is that the present study did not analyse the bidirectional causality between financial instability and country-wide protests. There could be a bidirectional

relationship or a simultaneous relationship between financial instability and country-wide protests, since financial instability can also lead to country-wide protests as was witnessed in the recent case of Argentina and Lebanon.

Future studies can re-examine the topic of this paper by using some instrumental variables analysis to measure social unrest, or use an event study analysis in which 'social unrest' is clearly identified and seen as unexpected by the financial markets and financial institutions. Such analysis will provide a pre-event, during-event and post-event analyses of financial stability before (or during) country-wide protests and after country-wide protests. Future studies can also extend this study by using a cross-country sample when reliable protest data becomes available. Future studies can also extend this study by investigating the effect of small protests on the stability of financial institutions located in small cities, towns or suburbs. Also, future studies can use other indicators of financial stability when investigating the effect of protests on financial stability.

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