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Kontakt/Contact

ZBW – Leibniz-Informationszentrum Wirtschaft/Leibniz Information Centre for Economics
Düsternbrooker Weg 120
24105 Kiel (Germany)
E-Mail: [rights\[at\]zbw.eu](mailto:rights[at]zbw.eu)
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Civil unrest and firm performance: Evidence from Chile

Christian Espinosa-Méndez *

Departamento de Administración, Facultad de Administración y Economía, Universidad de Santiago de Chile, Chile

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Abstract

This investigation considers the recent civil unrest in Chile to determine whether these increase or decrease the performance of companies. Using a panel composed of 99 non-financial firms listed on the Santiago de Chile Stock Exchange during the period between the first quarter of 2017 and 2020 I find that civil unrest negatively impacts firm performance. This effect is asymmetric among the different industrial sectors with the Trade and Industrial sectors being the most adversely affected. On the other hand, the Agriculture-fishing and Utilities sectors show a better performance.

Keywords: Civil unrest; Firm performance; Chile

JEL Classification Codes: G15, G14

1. Introduction

While there is abundant literature on how high-impact civil conflicts, such as terrorist attacks (Aslam and Kang, 2015) and civil war (Blattman and Miguel, 2010), impact financial markets, there is little evidence on how low-impact events such as riots and demonstrations called "civil unrest" influence these markets. Some scarce studies in this area have reported, for example, that civil unrest is one of the causes of shallow financial markets in Georgia (Suzuki and Dulal, 2010), that an increase in foreign direct investment reduces the risk of civil violence for skilled-labor intensive fuel-resource rich SSA countries (Kibria et al., 2020) and that civil unrest has an inverse effect on herding behavior in Chile (Espinosa-Méndez, 2021). However, no articles are found in the financial literature investigating the impact of civil unrest on firm performance.

The most critical and recent social unrest occurred in democracy in Chile initiated on October 17th, 2019 with the massive evasion of payment in the Santiago Metro by high school students in response to the 30 pesos (0.05 USD) fare hike in Santiago's public transportation system provides a favorable scenario to investigate the impact of civil unrest on firm performance. In this scenario, during civil unrest, several companies suffered robberies and looting where some of them opted to close their operating premises and others adjusted their labor costs by laying off employees. As a consequence, these situations led to a strong reduction in consumption and

* Corresponding author. E-mail: christian.espinosa.m@usach.cl.

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production, registering in October 2019 a Monthly Economic Activity Indicator (Imacec) of -3.4% being the lowest in the last 10 years, which is expected to have a negative impact on the performance of companies. However, protests, uprising events or civil unrest may not necessarily be equally detrimental to all stocks and industries. Indeed, Acemoglu et al. (2014) reported that more intense protests during Egypt's Arab Spring are associated with lower stock market valuations for politically connected firms relative to non-connected firms. Mousavei et al. (2014) show on the one hand that the uprising events of Middle East and North Africa have more impact on the volatility of risks and returns of stock markets of developed, developing, and European regions than MENA itself, and on the other hand the return of oil and gold markets were not affected by the recent MENA conflicts. Epstein and Schnietz (2002) reported that the market value of United States firms declined as result of the World Trade Organization ministerial meeting's 1999 failure in Seattle and that a portfolio of all Fortune 500 firms declined by less than the portfolio of firms in industries perceived as environmentally or labor-abusive. Given this evidence, is possible to expect that while several sectors suffer the consequences of civil unrest, some others may benefit from the uncertainty generated. Thus, on the one hand, sectors more closely linked to food consumption, such as agriculture, fishing and livestock, could increase their performance in the face of an increase in consumption due to fears of shortages. On the other hand, those sectors most affected by the riots, especially those that suffered looting and had to close their stores, as in the case of the market sector, would show a drop in their performance.

Given the above, this paper investigates, first, whether civil unrest increases or decreases the performance of companies at a general level and, second, how civil unrest affects the performance of companies in different industrial sectors. The paper proceeds as follows. Section 2 introduces the data and methodology. Section 3 presents the empirical results. Section 4 concludes the article.

2. Data and methodology

2.1. Data

The data correspond to a panel composed of 99 non-financial companies listed on the Santiago Stock Exchange during the period between the first quarter of 2017 and 2020. Those companies that do not have information on the variables used have been excluded. On the other hand, information as of the second quarter of 2020 is not considered in order to isolate the COVID-19 effect on the companies' results. The combination of the selected firms and the periods analyzed provides a balanced panel with 1287 observations. Return on Assets (ROA) measured as net income over total assets is employed as a measure of firm performance. ROA is employed because managers and external analysts often use this indicator as a measure of management effectiveness and firm efficiency (Robins and Wiersema, 1995) and has been widely used in previous studies (Vu et al., 2018; Bennouri et al., 2018; Kılıç and Kuzey, 2016; among others).

2.2. Methodology

To investigate the relationship between civil unrest and firm performance, the following model is estimated:

$$\text{Perform}_{i,t} = \beta_0 + \beta_1 \text{CivilUnrest}_{i,t} + \sum_{i=5}^n \beta_i CV_{it} + i_k + x_t + y_t + \varepsilon_{it} \quad (1)$$

where Perform corresponds to Return on Assets (ROA), Civil unrest is a dummy variable that takes the value of 1 in the fourth quarter of the year 2019 and first quarter of the year 2020, and 0 in any other case. CV_{it} is a series of control variables that potentially influence performance of the company such as company size (Size) measured as the logarithm of total assets; degree of indebtedness (Debt), measured by the ratio of total indebtedness over total assets; tangibility

(Tang), measured by the ratio between total fixed asset over total assets; Cash Flow (Cash) is operating income before depreciation over total assets; y GE is a dummy variable which takes the value of 1 if the company is affiliated to a business group and 0 in any other case, according to the classification made by the Financial Market Commission in Chile. In addition, a set of fixed effects at industry level is included (i_k), quarterly level (x_t) and year level (y_t) to control for unobservable time-invariant and time-variant fixed effects. The industry level fixed effect is defined as a set of industrial dummy variables according to *Economatica* classification, and the quarterly level and year level fixed effects are defined as a set of year dummy variables. The latter are controlled by seasonal and year-end effects, respectively.

An initial estimate by ordinary least squares (OLS) of model $\text{Perform}_{i,t} = \beta_0 + \beta_1 \text{CivilUnrest}_{i,t} + \varepsilon_{it}$ reports a coefficient $B_1 = -0.012$ (S.E. 0.0054) statistically significant at 5%. This means that the financial performance of the companies in the sample fell by 1.2% during the civil unrest period. However, the estimation by OLS would yield biased and inconsistent results. Therefore, I use panel data methodology which allows us to control for individual heterogeneity. Specifically, I estimated a dynamic panel using the generalized methods of moments (GMM) which was developed by Arellano and Bond (1991), augmented by Arellano and Bover (1995) and fully developed in Blundell and Bond (1998). GMM method permit to control for endogeneity of all firm-level variables by introducing lagged control variables of equation (1) as instruments. I introduce all control variables lagged from $t-1$. The GMM estimator is valid only if two conditions are met. The first condition requires that the over-identifying restrictions (all chosen instruments) are valid, while the second condition excludes the presence of second-order serial correlation in residuals. The overall validity of the instruments is tested with the Hansen test, while the second condition can be verified with Arellano and Bond's test statistics (m1 and m2). Therefore, the GMM estimator will be consistent even if first-order autocorrelation exists; however, second-order autocorrelation must not be present in the model (Pervan et al., 2019).

3. Results

Table 1 shows statistics for the variables used in the study. The average ROA for the sample is 2.6%. The companies have a moderate level of indebtedness (Debt=0.45), a low ratio of cash to total assets (Cash=0.097) and a high level of fixed assets over total assets. In addition, 63% of the companies are affiliated with a business group. The industrial sector is the most representative of the sample (32.3%). Table 2 reports the correlations between the study variables. It is observed that civil unrest is negatively correlated with the performance of the companies. In turn, this performance is negatively related to the size and level of indebtedness of the company; and negatively related to the proportion of cash and fixed assets held by the company.

Table 3 report the results of the estimates in equation (1) using ROA as dependent variable. Column 1 shows the effect of civil unrest on firm performance while columns 2 through 9 show the effect of civil unrest on each of the industrial sectors. The results show that civil unrest decrease the performance of companies at a general level (Civil Unrest = -0.033). Moreover, this effect is asymmetric among the different industrial sectors. The most affected sectors are the Trade and Industrial sectors where the relationship between civil unrest and performance is negative. As expected, the market sector was affected by robberies and looting, which led several establishments to stop operating. In turn, the industrial sector showed a significant absence of labor due to work stoppages and difficulties in the transfer of the labor force. On the other hand, the Agriculture-fishing and Utilities sectors performed better. The fear of shortages and the longer stay at home boosted the consumption of food and basic services.

Table 1. Statistic descriptive of the variables.

VARIABLES	TOTAL			
	mean	sd	min	max
Roa	0,026	0,070	-0,958	0,907
Tam	19,560	1,967	112,900	23,822
Deb	0,454	0,177	0,001	0,938
Tang	0,400	0,259	0,000	0,917
Cash	0,097	0,104	-0,327	1,205
Ge	0,630			
Agriculture-fish- ing	13,1%			
Commerce	12,1%			
Construction	3,0%			
Utilities	18,2%			
Industrial	32,3%			
Transport	7,1%			
Real State	7,1%			
Others	7,1%			

Notes: Table 1 shows the descriptive statistics of the variables. Variable definitions are reported in Methodology section. The mean, standard deviation (sd), minimum (min) and maximum (max) are illustrated, respectively for each variable. Sources: Economatica.

Table 2. Matrix of correlations.

	1	2	3	4	5	6	7
1 Roa	1						
2 Civil	-0.062**	1					
3 Tam	-0.183***	0.024	1				
4 Deb	-0.086 ***	0.054*	0.483***	1			
5 Tang	0.073***	-0.005	0.057**	-0.001	1		
6 Cash	0.744***	-0.087***	-0.022	0.010	0.216***	1	
7 Ge	-0.005	0.000	0.320***	-0.031	0.165***	0.124***	1

Notes: Table shows the correlation matrix across variables of interest. Variable definitions are reported in Methodology section. Significance level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Sources: Economatica.

4. Conclusion

This paper investigates how civil unrest impacts firm performance using as a baseline scenario the largest and most critical riots that occurred during the democratic period in Chile. The results show that civil unrest decreases the performance of companies at a general level. However, this effect is asymmetric across industrial sectors. In particular, it is found that firms belonging to the Market and Industry sectors see their performance fall while those belonging to the Agriculture-fishing and Utilities sectors see their performance increase. In summary, on the one hand, social unrest decreases the performance of firms participating in industries that suffer the direct consequences of vandalism, looting and destruction; and on the other hand, the uncertainty regarding the severity and duration of the unrest increase the performance of those firms participating in industries related to basic services and food in general.

This paper contributes to the financial literature by reporting evidence on how civil unrest impacts firm performance. This evidence offers a new area of research to better understand how low-impact civil unrest social interactions relate to financial markets.

Table 3. Civil unrest and performance firm.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Civil Unrest	-0.033*** (0.011)	-0.034*** (0.006)	-0.017*** (0.005)	-0.025*** (0.005)	-0.045*** (0.007)	-0.023*** (0.006)	-0.030*** (0.005)	-0.033*** (0.005)	-0.027*** (0.005)
Agriculture-fishing*Civil Unrest		0.041** (0.017)							
Commerce*Civil Unrest			-0.168*** (0.043)						
Construction*Civil Unrest				-0.162 (0.128)					
Utilities*Civil Unrest					0.113*** (0.025)				
Industrial*Civil Unrest						-0.027** (0.012)			
Real State*Civil Unrest							0.038 (0.027)		
Transport*Civil Unrest								0.059 (0.055)	
Others*Civil Unrest									-0.061*** (0.022)

Table 3. Civil unrest and performance firm (cont'd).

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Size	-0.008** (0.003)	-0.006*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.008*** (0.001)	-0.007*** (0.001)	-0.004*** (0.001)	-0.006*** (0.001)	-0.003*** (0.001)
Debt	-0.014 (0.041)	0.011 (0.012)	-0.000 (0.012)	-0.002 (0.012)	0.009 (0.012)	0.015 (0.016)	0.001 (0.011)	0.009 (0.011)	-0.014 (0.012)
Tang	0.004 (0.026)	-0.015*** (0.006)	-0.018*** (0.006)	-0.019*** (0.006)	-0.034*** (0.010)	-0.012* (0.007)	-0.016*** (0.005)	-0.018*** (0.005)	-0.023*** (0.005)
Cashflow	0.289*** (0.046)	0.399*** (0.009)	0.413*** (0.010)	0.412*** (0.010)	0.391*** (0.014)	0.383*** (0.013)	0.397*** (0.010)	0.390*** (0.010)	0.410*** (0.010)
GE	0.028** (0.011)	0.006*** (0.002)	0.006*** (0.002)	0.004* (0.002)	0.008*** (0.003)	0.009*** (0.003)	0.003 (0.002)	0.008*** (0.002)	0.003* (0.002)
Constant	0.078 (0.071)	0.060*** (0.012)	0.037*** (0.014)	0.046*** (0.012)	0.109*** (0.026)	0.085*** (0.023)	0.037*** (0.011)	0.068*** (0.011)	0.019* (0.011)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Quarterly FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
F-Test	46.92***	410.9***	269.3***	371.9***	251.6***	345.1***	377.6***	346.3***	360.9***
m1	0.039	0.038	0.017	0.025	0.077	0.039	0.033	0.039	0.021
m2	0.272	0.205	0.106	0.255	0.149	0.171	0.313	0.169	0.312
Hansen-Test	22.16	48.99	36.39	45.62	39.93	39.96	53.58	47.31	45.32
Hansen p-value	0.729	0.109	0.544	0.185	0.384	0.383	0.0481	0.170	0.193

Notes: The model 1 shows the relationship between Civil Unrest and Performance Firm. The models 2-9 show the effect of civil unrest on each of the industrial sectors. To control for unobservable heterogeneity and endogeneity issues, a dynamic panel is estimated using the generalized methods of moments. The overall validity of the instruments is tested with the Hansen test, while the second condition can be verified with Arellano and Bond's test statistics (m1 and m2). Standard errors in parentheses. Variable definitions are reported in Methodology section. Significance level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

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