Asian Development Policy Review
ISSN(e): 2313-8343
ISSN(p): 2518-2544
DOI: 10.55493/5008.v11i1.4730
Vol. 11, No. 1, 22-36.

URL: www.aessweb.com

Social security, psychological threat, and corporate performance: An analysis of financial performance after enactment of a social security scheme in Nepal

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Article History
Received: 31 October 2022
Revised: 24 January 2023
Accepted: 3 February 2023
Published: 21 February 2023

Keywords
Corporate performance
Difference-in-differences method
Labor
Nepal
Panel data
Social security plan.

ABSTRACT

The main objective of this study was to analyze the impact of the contribution-based social security scheme on corporate performance after the enactment of the new policy in 2018. Panel data from 2015 to 2021 with observations of 266 companies, including 38 corporations from the banking and non-banking sectors, was used to analyze the impact of the new policy on corporate performance. This impact, as well as the role of psychological fear, was examined using the difference-in-differences analysis method. The findings of the analysis revealed an adverse impact on corporate performance in the banking sector compared to the non-banking sector. The study also showed that the banking sector's psychological fear was greater than that of the non-banking sector after the implementation of the policy. The conclusions of this study are helpful in understanding the corporations' performance gap before and after the policy, as well as in making a strategic plan to overcome the psychological fear of the employees. This study suggests that the social security fund should use a mass media orientation program to explain the benefits and scope of the new policy.

Contribution/ Originality: This study is the first to examine the impact of a contribution-based social security program on corporate performance following its enactment in 2018. The study employed a difference-in-differences analysis model, a powerful instrument for policy analysis, to enable interested parties to benefit from this study.

1. INTRODUCTION

Social security and social welfare are becoming big issues in both developed and developing countries. They are widely associated with sustainable economic development, labor productivity, and social justice (Ferguson, 2019). To promote productivity, quality of work life, and social well-being in society, social security systems play a pivotal role in developing countries by ensuring sustainable financial security (ILO, 2019). The social security system not only provides financial security after retirement but equally benefits quality-of-life standards by reducing inequality and labor force participation gaps due to health, education, and market opportunities. As explained by Kumar (2022), an effective social protection umbrella implements three main social-security systems, including universal social protection that includes benefits in case of sickness, unemployment, occupational injury, or survivorship; a social protection floor that ensures public services for basic needs; and social transfers.

Social security schemes are used as a vote-collecting instrument for many political parties in developing countries, which are introducing diverse social security programs; however, another aspect is that the high future tax

burden is an unseen and undebatable issue. According to William and Lee (2005), there are two schools of thought on social security systems: first, the trade-off cost is high for future generations because the social security plans increase the tax burden in the future, and a large amount of public expenditure will have to go to the social security system (Dilnot & Webb, 1991), and second, it will increase labor productivity, which provides comparatively higher present value of outputs that cannot be realized in the future due to the current structure of populations. However, the current social security schemes have been restructured as pay-as-you-go systems to address the future tax burden on the government (Svihula & Estes, 2007). A contribution-based social security system means that the tax burden on the government will not be significant, and it will also help cover all labor markets as per the 1948 Universal Declaration of Human Rights (UDHR).

As a signatory nation of the Universal Declaration of Human Rights, Nepal has agreed to provide basic social security schemes to the workforce and community members who are marginalized or in financial need (Mathema, 2012). The 2015 constitution of Nepal enshrined social security as a fundamental right of the people. As social security is a fundamental right, the government of Nepal has urged all employers to list their employees in a social security system as per the social security guidelines. Since the 1990s, the social security issue has been a hot topic and an instrument of voter influence during election periods; as a result, many governments are trying to take ownership of this policy within their own set of programs.

The current policy is not limited to the fundamental rights ensured by the constitution; it is equally concerned with the corporate sectors after the enactment (in 2018) of contribution-based social security systems. The policy requires employers to contribute 18% of the employee's basic remuneration and the employee to contribute 11%. This policy has caused considerable debate about whether enrollment in social security funds will benefit employees. Indeed, the enactment of the contribution-based social security act 2017 caused significant psychological fear among the contributors. Therefore, this paper analyzes the impact of the new social security policy on corporate performance and psychological fear by examining sectorial performance in the Nepalese banking and non-banking sectors.

The remainder of this paper is divided into the following sections: Section 2 provides a brief overview of contribution-based social security schemes in Nepal, which is followed by a literature review in Section 3. Section 4 outlines the research design and descriptive analysis. Section 5 presents and discusses the data analysis results. Finally, Section 6 provides a quick summary and conclusion with policy recommendations.

2. NEPAL'S SOCIAL SECURITY FUND

The Social Security Fund was established according to the Social Security (Management Fund and Operations) Rules 2011. This fund has managed the social security tax since its inception and has been working in accordance with the Contribution-Based Social Security Act 2017. The purpose of this fund is to ensure the right to social security based on the workers' contributions and to provide social security to the contributors. The fund's programs aim to reduce the economic and social risks of all workers by incorporating them into the social security scheme, embodying the concept of universal social security and ensuring the constitutional right to contribution-based social security.

The Contribution-Based Social Security Act 2017 provides for the inclusion of formal and informal sector workers and self-employed persons in the social security scheme. Social security provisions include the medication, treatment, and health security plan, maternity protection plan, accident protection plan, disability protection plan, old age protection plan, dependent family protection plan, and unemployment assistance plan. The scope of social security schemes that the fund operates is defined as the Social Security Scheme, and the operation of the Social Security Scheme is defined under the Social Security Scheme Operation Procedure 2017. The evolution and legal foundation of the social security fund are presented in Figure 1.

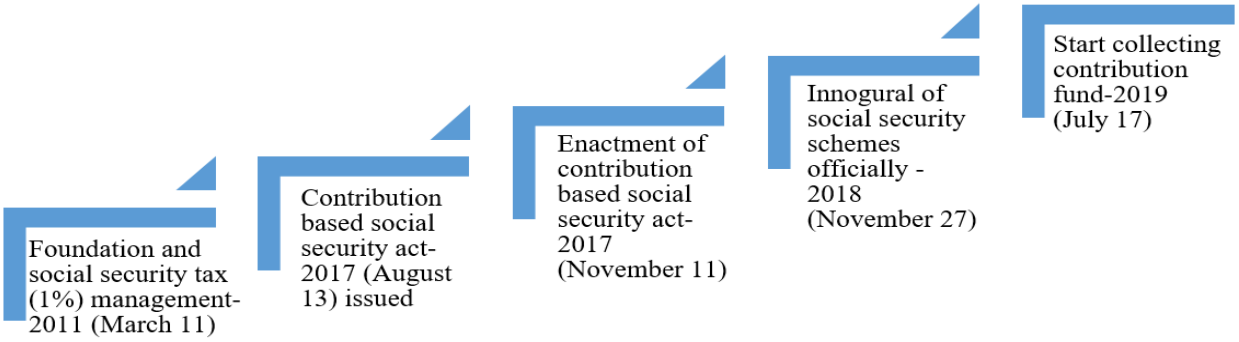

Figure 1. Social security fund evolution and legal foundation.

Source: Official social security fund website.

2.1. What is the Contribution-Based Social Security Scheme 2018?

The government of Nepal promulgated the Contribution-Based Social Security Act 2017 to address social security issues of labor and to ensure a socially and financially just society. The contribution-based social security scheme is jointly funded through the contributions of workers and employers. As stated in the Contribution-Based Social Security Regulations 2018 and the Social Security Schemes Operational Directives 2018, employers and employees are obligated to contribute a total of 31% of the employee's basic monthly remuneration to the social security fund. The contribution of each party is given in Figure 2, and the allocation of the contributed amount is given in Figure 3.

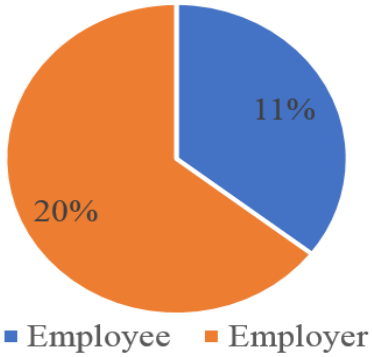

Figure 2. Contribution to social security fund by employees and employers.

As per the legal provision, the contribution of workers to the plan is 11% of their basic salary, which accounts for 35.48% of the total contribution, and 64.52% of the contribution comes from the employers. On the other hand, the total amount contributed to the social security fund is allocated to four major schemes, as demonstrated in Figure 3 and Table 1.

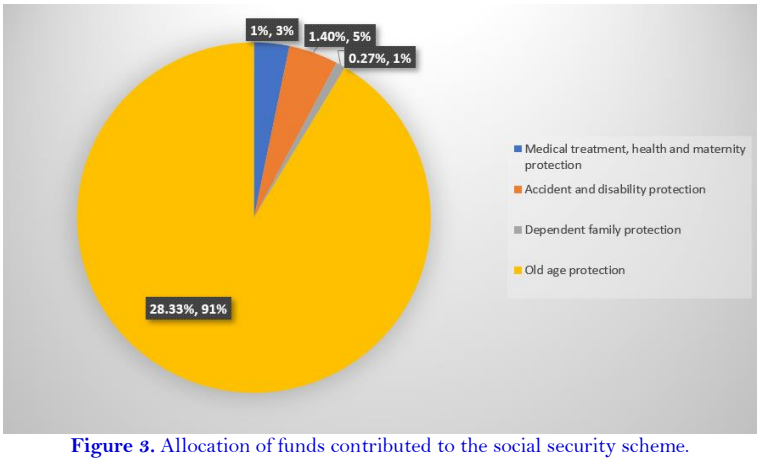

Figure 3. Allocation of funds contributed to the social security scheme.

Table 1. Allocation of social security funds to different schemes.

S.N.	Social security schemes	Allocation	Ratio
1	Medical treatment, health, and maternity protection	1%	3.23%
2	Accident and disability protection	1.40%	4.52%
3	Dependent family protection	0.27%	0.87%
4	Old age protection	28.33%	91.39%
Total		31%	100.00%

As stated in the legal framework, the highest portion of funds (91.39%) is assigned to the old age protection plan, followed by the accident and disability protection scheme (4.52%), the medical treatment, health, and maternity protection scheme (3.23%), and the dependent family protection scheme (0.87%), respectively. This allocation of funds indicates that the social security schemes are more focused on old age protection or the provision of a retirement plan. This is the point opposed by private sector banks because the banking sector has its own retirement and employee benefit plans that they currently use.

Another important aspect of the contribution-based social security scheme is that workers are eligible to participate in the social security scheme as soon as they begin their job, and individuals in the informal sector can be listed as contributors as well. However, they have to contribute for at least 6 months to be eligible for the benefits (International Labour Organization, 2018; Upreti & Pandey, 2018). Before this scheme, there was no such integrated social security fund management institution and social security plan; however, the Citizens Investment Trust (CIT), Employees Provident Fund (EPF), Army Welfare Fund (AWF), Nepal Police Welfare Fund (PWF), and individual financial institutions used to manage funds contributed by formal sector employers and employees. This new social security plan has opened an integrated fund management and social security scheme system that includes informal sector workers as well.

3. LITERATURE REVIEW

Several studies have been conducted on social security systems and labor productivity in different contexts, such as those of Elert, Henrekson, and Sanders (2019), ILO (2017c), and Zhang and Zhang (2004). Zhang and Zhang (2004) investigated how a social security system interacts with economic growth and growth factors by examining savings, human capital investment, and fertility. Svihula and Estes (2007) examined the alignment of ideological proximity and social security reform using a content and cluster analysis approach. A similar analysis was undertaken by Eleftheria (2012), who, along with multi-dimensional analysis, used correspondence analysis (CA) and hierarchical cluster analysis (HCA) to analyze the connection between social security policies and economic developments in Greece and the European Union. Another study by Feldstein (2005) explored social security reforms and analyzed the economic gain that would follow from shifting to a mixed system. Supriadi (2017) investigated the discrepancy in the fulfillment of social security rights and decent wages to increase labor productivity by using a causal comparative analysis method to study 504 labor organizations; the research concluded that social security and decent wages have a significant impact on labor productivity. Collectively, the social protection and labor systems, policies, and programs support the management of risk and volatility by protecting from poverty and destitution (World Bank, 2012).

Torm (2018) examined the relationship between social protection and enterprise performance in the context of small and medium-sized enterprises in developing countries. The study used Indonesian census data from 2010 to 2014 and a simple logit model to establish the relationship between social security and enterprise performance, and the analysis found no evidence that contributing to the social security system resulted in lower profits per worker. Similarly, Tabuga and Cabaero (2019) examined the social insurance aspect of the Philippines' Pantawid Pamilyang Pilipino Program, along with categorizing employment types and analyzing gender differences in access to social protection, using survey-based data from the Philippine statistics authority. The study concluded that there was inequality between men and women in formal sectors. This finding can be generalized to labor productivity and

corporate performance because government intervention in the social security system improves welfare and redistributes facilities, as argued by Boadway, Leite-Monteiro, Marchand, and Pestieau (2002).

Asher (2001) provided an assessment of the sustainability of the formal social security systems in five Southeast Asian countries: Indonesia, Malaysia, the Philippines, Singapore, and Thailand. The study argued that the formal social security system could be reformed from a traditional to a contribution-based security system, such as the one Nepal adopted in 2018 and that many other countries have also implemented. The study of Kutzin (2001) proposed a conceptual framework to analyze the effectiveness of insurance policies for the enhancement of insurance functions, using descriptive analysis. Similarly, Tresch (2022) analyzed the effect of both defined contribution and benefit public pensions on savings, using the Diamond OLG model as the primary analytical framework. Beetsma, Komada, Makarski, and Tyrowicz (2021) analyzed the political stability of a funded social security system using a stylized theoretical framework. They argued for the introduction of a two-pillar defined contribution scheme with funding. They also rationalized the experience of Central and Eastern European countries who turned back the funded retirement pillars. A study by Vlassis (2019) developed a game-theoretical framework endogenizing firms' choice not to declare labor in the absence of a government scrutiny and sanction mechanism to impose declared labor. The study suggested that the declared and undeclared labor equilibria result from different configurations among the tax systems.

From a methodological perspective, very few studies have used quantitative analysis to assess the relationship between social security and labor productivity. Zhang, Shi, and Shi (2021) examined data from 2009 to 2018 on listed private enterprises in the heavy pollution industry to analyze the link between social insurance and labor productivity using the generalized method of moments (GMM) panel data estimation method. The study concluded that the ratio of social insurance contributions has a negative impact on the productivity of selected enterprises. The study also looked at the effect of social security contributions crowding out technological investment in more labor-intensive firms. Similarly, Adam, Phillips, and Roantree (2019) examined the effect of employee and employer social security contributions on labor cost, working hours, and wage rate per hour using long-running panel data over 35 years of policy reforms in the United Kingdom (1982 to 2015). They concluded that a reduction in the marginal rate of employees has a positive impact on labor costs but not on the employer. They used both contemporaneous and lagged changes in net-of-national insurance contribution (NIC) rates, allowing them to assess the impact of NICs after reform in their empirical analysis.

Another important study by Chen, Xu, Tian, and Meng (2022) analyzed the impact of social insurance laws on corporate innovation through quasi-natural experiments in China. They used the difference-in-differences (DID) model with unique data and found that the collection of social insurance premiums after the implementation of social insurance laws significantly contributed to corporate innovation. Additionally, they suggested that the relationship between social insurance law and innovation is more pronounced for state-owned enterprises. Similarly, Liu, Liu, Zhang, and Zhu (2021) used the DID model to investigate social security contributions and corporate financing decisions in China before and after the implementation of the social security law in 2011.

The above review of the previous literature provides the theoretical and empirical background to the current study's impact assessment of the contribution-based social security scheme on corporate performance in Nepal. The next section presents the analysis procedure and research design.

4. RESEARCH DESIGN

A single-difference method can be used to examine the relationship between a contribution-based social security scheme and corporate performance in banks and insurance companies by comparing corporate performance before and after the enactment of the Contribution-Based Social Security Act 2017. However, the conclusions of the single-difference approach may not be justified. Many components affect the corporate performance of a firm, and other policies introduced at the same time will also affect both the psychological state of mind of employees and corporate

performance, meaning that the impact assessment strategy is not as sound as it should be. Therefore, we used a difference-in-differences strategy to observe the impact of the contribution-based social security scheme on corporate performance in banking and insurance companies in Nepal.

4.1. Data

This study employed panel or longitudinal data collected from different listed banks and insurance companies (life and non-life insurance companies) over the period 2015 to 2021. The data were collected from 20 commercial banks and 18 insurance companies. The list of sample firms is provided in Annex 1. The total number of observations is 266 within a 7-year time period. The data are divided into two parts: first, before the enactment of the Contribution-Based Social Security (CBSS) Act 2017, i.e., 2015 to 2017, and second, after the enactment of the CBSS Act 2017, i.e., 2018–2021. However, full data from 2015 to 2021 were used for baseline analysis of the impact of the social security scheme on corporate performance.

4.2. Baseline Regression Model and Summary Statistics

The regression model for testing the average effect of the contribution-based social security scheme on the corporate performance of banking and insurance companies is:

$$Y_{it} = \alpha + \beta_1 D\_SSS_{it} + \delta X_{it} + \gamma_t + \mu_i + \varepsilon_{it} \quad (1)$$

Where i and t denote the firm and year, respectively. We define Y_{it} as the target variable used to measure the performance of banking and insurance companies, including the market price per share in Nepalese rupees (MPS), dividend per share in Nepalese rupees (DPS), and return on assets in percentage (ROA). D_SSS_{it} indicates the enrollment of firm i in the contribution-based social security scheme (Social Security Fund) after the enactment of the Contribution-Based Social Security Act 2017 in year t. Taking into account the time lag of the policy, the contribution-based social security scheme will play a role in the year after the enactment of the policy and enrollment in the social security scheme in year t, that is D_SSS = 1, otherwise = 0. The vector X_{it} stands for a list of control variables that could affect corporate performance (Khan, Baig, Hussain, Usman, & Manzoor, 2021; Oli, 2021; Robert, Chang, & Lee, 2004). The list of control variables is earnings per share (EPS in Rs), as used by Oli (2021), Kabir and Chowdhury (2022), and Wet (2013), firm size measured as a natural logarithm of total assets in millions of rupees (lnFS), as used by D'Amato and Falivena (2020), market size or market coverage measured as the number of shares outstanding in millions (MS), as suggested by Mitani (2014), net profit in millions of Nepalese rupees (NP), as argued by Belleflamme, Peitz, and Toulemonde (2022), and the nature of the firm as a dummy variable defined as 1 for banking firms and 0 otherwise. We also included year-fixed effects in our regression model, and standard errors were clustered at the institutional level. The coefficient of interest is β, which is an estimate of the impact of the contribution-based social security scheme on corporate performance. Further, Equation 1 can be written as in Equations 2 to 4.

$$MPS_{it} = \alpha + \beta_1 D\_SSS_{it} + \delta_1 EPS_{it} + \delta_2 MS_{it} + \delta_3 lnFS_{it} + \delta_4 NP_{it} + \delta_5 D\_industry_{kt} + \gamma_t + \mu_i + \varepsilon_{it} \quad (2)$$

$$DPS_{it} = \alpha + \beta_1 D\_SSS_{it} + \delta_1 EPS_{it} + \delta_2 MS_{it} + \delta_3 lnFS_{it} + \delta_4 NP_{it} + \delta_5 D\_industry_{kt} + \gamma_t + \mu_i + \varepsilon_{it} \quad (3)$$

$$ROA_{it} = \alpha + \beta_1 D\_SSS_{it} + \delta_1 EPS_{it} + \delta_2 MS_{it} + \delta_3 lnFS_{it} + \delta_4 NP_{it} + \delta_5 D\_industry_{kt} + \gamma_t + \mu_i + \varepsilon_{it} \quad (4)$$

Hence, the above Equations 2, 3, and 4 have MPS, DPS, and ROA as proxy-dependent variables of performance measured from the market perspective, investors' perspective, and firm's perspective, respectively. The definition of each proxy variable is presented in Annex 2.

Table 2. Descriptive statistics.

Variable	Obs.	Mean	Std. dev.	Minimum	Maximum
Market price per share (Rs.)	266	815.85	717.44	139.00	4095.00
Dividend per share (%)	266	16.93	15.68	0.00	105.26
Return on assets (%)	266	4.47	11.15	-113.93	65.58
Earnings per share (Rs.)	266	25.85	16.91	-85.67	105.38
Market size (No. of shares in millions)	266	50.47	85.97	1.01	1213.18
Firm size (Total assets in million Rs.)	266	57703.12	67256.16	30.42	345423.30
Net profit (In million Rs.)	266	1351.23	3142.53	-259.01	30541.00

Note: Market price per share, dividend per share, and return on assets are the proxy of performance measurement. D_SSS, a dummy variable as a proxy of contribution-based social security schemes, is not present in the table.

Table 2 presents the descriptive statistics of the dependent and independent variables, including the mean, standard deviation, minimum, and maximum values of each of the respective variables. The table shows that the average market price per share (MPS) is Rs.815.85, with a standard deviation of Rs.717.44. The data distribution for MPS ranges from a minimum of Rs. 139 to a maximum of Rs. 4095. Similarly, the average dividend per share (DPS) is 16.93%, with a standard deviation of 15.68%. The minimum DPS is 0.00%, and the maximum is 105.26% over the observation period. Return on assets (ROA), another performance proxy variable, ranges from -113.93% to 65.58%, with an average value of 4.47% and a standard deviation of 11.15%.

Similarly, the mean earnings per share (EPS) value is Rs. 25.855, with a standard deviation of Rs. 16.911. The EPS ranges from Rs. -85.67 to Rs. 105.38 over the study period. The firms' average market size is 50.47 million shares, with a minimum of 1.01 million and a maximum of 1213.18 million shares. Similarly, the average value of assets is Rs. 57703.12 million, with a minimum value of Rs. 30.42 million and a maximum value of Rs. 345423.30 million. In the same way, the average net profit of the corporations is Rs. 1351.23 million, with a standard deviation of Rs. 3142.53 million. The net profit distribution ranges from a minimum of Rs. -259.01 to a maximum of Rs. 30541.00 million over the observation period of the sample corporations in Nepal.

We also performed correlation analysis to test the associations between pairs of variables. The correlation coefficient provides two major types of information; first, it indicates how much of the dependent variable is explained by the independent variables, and second, this coefficient indicates the direction of impact on the dependent variables, i.e., whether it is positive, negative, or there is no direction at all. Therefore, the correlation coefficients were estimated and are presented in Table 3.

Table 3. Correlation analysis.

Variable	MPS	DPS	ROA	D_SSS	EPS	MS	Ln_FS	NP	D_industry
MPS	1.000								
DPS	0.501	1.000							
ROA	0.161	-0.004	1.000						
D_SSS	-0.345	0.166	-0.174	1.000					
EPS	0.309	0.312	0.087	-0.191	1.000				
MS	-0.139	0.007	-0.144	0.244	-0.157	1.000			
Ln_FS	-0.147	0.205	-0.289	0.271	-0.084	0.420	1.000		
NP	0.035	0.197	-0.086	0.052	0.17	0.136	0.360	1.000	
D_industry	-0.368	0.076	-0.275	0.000	-0.059	0.346	0.673	0.345	1.000

Note: All variable definitions are detailed in Annex 2.

Table 3 shows the correlation analysis results of the variables used in this study. The correlation coefficients illustrate that there are negative correlations between MPS and D_SSS, MS, Ln_FS, and D_industry, indicating that the MPS is negatively affected by the social security scheme, market coverage, firm size, and industry. However, MPS is positively affected by EPS and net profit, and these have been explained as the major factors influencing market price (Bosch & Eckard, 1991). Similarly, DPS is positively correlated with all variables except for D_SSS, which is the major factor of concern in this analysis. Another proxy measure of profitability, ROA, is negatively correlated

with all variables except for EPS. Hence, D_SSS is negatively correlated with the performance indicators, which shows that the enactment of the new social security scheme had a negative impact on corporate performance.

5. EMPIRICAL ANALYSIS

Our analysis centers on observing the impact of the contribution-based social security scheme launched by the government of Nepal in 2018 on corporate performance.

5.1. Baseline Regression Result

Table 4 presents the baseline regression results calculated through pooled ordinary least squares estimation for the defined sample over the period 2015–2021.

Table 4. Baseline regression of the contribution-based social security scheme on corporate performance.

Dependent variable	MPS		DPS		ROA	
	(1)	(2)	(1)	(2)	(1)	(2)
D_SSS	-498.98***	-612.71***	-0.262**	-7.125**	-3.92***	-3.088
	(-6.002)	(-6.386)	(-2.395)	(-2.674)	(-3.201)	(-1.254)
Constant	1100.98***	178.07	19.94***	-11.132*	6.71***	14.42***
	(13.75)	(0.687)	(11.650)	(-1.989)	(7.784)	(3.213)
Control variables	No	Yes	No	Yes	No	Yes
Observations	266	266	266	266	266	266
R-squared	0.119	0.396	0.028	0.206	0.031	0.115
P-value (F)	0.000	0.000	0.022	0.000	0.003	0.000
Durbin-Watson	1.613	1.766	1.817	1.821	1.230	1.426

Note: ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 level, respectively. The value in parentheses is the t-value. All variable definitions are detailed in Annex 2.

5.2. Robustness Check

We tested whether an estimated result obtained through the pooled OLS estimation method was sufficient to interpret and generalize by using a panel diagnostic test. Therefore, we conducted Breusch-Pagan and Hausman tests to ascertain the generalizability of the regression result, as explained by Baltagi (2005). The results of the Breusch-Pagan and Hausman tests are presented in Table 5.

Table 5. Panel diagnostic test results.

Model test	Test statistics (Chi² p-value)		
	(1)	(2)	(3)
Breusch-Pagan (LM) test	46.403	59.755	2.989
	(0.0000)	(0.0000)	(0.084)
Hausman (H) test	9.960	34.472	23.969
	(0.0413)	(0.0000)	(0.0000)
Control variables	Yes	Yes	Yes
Observations	266	266	266

Table 5 provides evidence of the suitability of the analysis through panel diagnostic tests for three different models with control variables. As a rule, the p-value of the chi-squared test should be greater than 0.05 to indicate model suitability, and the same holds for the Hausman test. However, none of the model tests provided a p-value > 0.05 in these tests, except for the LM test in Equation 3.

Therefore, we conclude that the regression results of the pooled OLS model cannot be generalized, and further diagnostics are needed in the form of panel data analysis using the generalized least squares (GLS) technique.

5.3. Generalized Least Squares (GLS)

In the next step of our empirical analysis, we conducted a generalized least squares (GLS) analysis using random-effect (RE) estimation to rationalize the regression outcome (Bell, Fairbrother, & Jones, 2019) by addressing the endogeneity issues suggested by the results of the Breusch-Pagan test. As explained by Baltagi (2005), for RE estimation analysis, the model assumes that the variance of mean value should be zero with an individual error value for each observation but constant variance, as well as independent explanatory variables in the model specification. The RE estimation results over the defined sample period of 2015–2021 are presented in Table 6.

Table 6. Random effects estimation of the contribution-based social security scheme's effect on corporate performance.

Dependent variable	MPS		DPS		ROA	
	(1)	(2)	(1)	(2)	(1)	(2)
D_SSS	−282.158*** (-2.873)	-466.777** (-2.527)	-4.572 (-1.574)	-6.971 (-1.252)	-4.370** (-2.344)	-4.609 (-1.523)
Constant	915.03*** (6.970)	404.579 (1.199)	18.756*** (6.288)	-5.518 (-0.623)	7.552*** (3.374)	19.520** (2.306)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Control variables	No	Yes	No	Yes	No	Yes
Observations	266	266	266	266	266	266
R-squared	0.167	0.177	0.018	0.081	0.038	0.165
Chi-squared P-value	0.000	0.000	0.146	0.109	0.501	0.000
Durbin-Watson	1.369	1.433	1.932	2.033	1.230	2.010

Note: All variable definitions are detailed in Annex 2. The value in parentheses is the z-value. *** and ** indicate significance at the 0.01 and 0.05 level, respectively.

Table 6 illustrates the impact of social security policy shocks on corporate performance as analyzed through GLS estimation by addressing the endogeneity issues in Nepalese banking and insurance industries as representative of corporate sectors. The social security scheme not only has a direct impact on the market performance of corporate firms but equally affects the psychology of employees, investors, and markets as a whole (Barney, 1991). However, how the policy adversely affects corporate performance depends on many other factors. In this study, the beta coefficients of D_SSS are negative with MPS, DPS, and ROA, indicating a negative impact of the contribution-based social-security scheme on corporate performance. This finding can generally be explained through inflation target logic on adverse market performance (Dridi & Boughrara, 2021). However, the proxy variables of market performance are significant with MPS and ROA, yet even for ROA without considering the control variables it is not significant.

As we know that the stock market is highly volatile and sensitive to any policy shock (Chatziantoniou, Duffy, & Filis, 2013), the contribution-based social security enactment was a great shock to the market performance of Nepalese banks and insurance companies because it directly necessitated a financial contribution to the social security scheme. Our primary objective in this study was to assess the impact of the social security scheme on corporate performance in banking and non-banking industries. From a psychological perspective, banking and non-banking industries have different understandings of the new scheme. Therefore, to assess the psychological impact of the contribution-based social security scheme, we conducted a difference-in-differences (DID) analysis of banking and non-banking industries by taking the market price per share (MPS) as a proxy of corporate market performance. Specifically, we employed Equation 5:

$$\pi_{it} = \alpha_0 + \partial_1 \sum_{t}^{i} \theta_{ik} - \sum_{t}^{i} \vartheta_{ik} + \gamma_i + \mu_i + \varepsilon_{it} \quad (5)$$

Where ∂_1 is the coefficient of the net impact between the banking and non-banking sectors before and after the policy enactment. As discussed, the cutoff point was the year 2018, when the contribution-based social security scheme was officially launched and supporting legal provisions were enacted. θ_{ik} and ϑ_{ik} indicate the coefficient of the net

impact of post and pre-policy enactment on banking and non-banking firms, respectively. To calculate the post and pre-policy impact on each sector, we used Equations 6 and 7.

$$y_{it} = \alpha_0 + \theta_k Post\_Banking_{it} - \vartheta_k Pre_{Banking_{it}} + \gamma_i + \mu_i + \varepsilon_{it} \quad (6)$$

$$y_{it} = \alpha_0 + \theta_k Post\_non - banking_{it} - \vartheta_k Pre_{non} - banking_{it} + \gamma_i + \mu_i + \varepsilon_{it} \quad (7)$$

Hence, by employing the above equations, we analyzed how the contribution-based social security scheme affected the corporate performance of banking and non-banking institution and examined the overall effect of the new policy on corporate performance from a different perspective. The estimated difference-in-differences analysis is presented in Table 7.

Table 7. Difference-in-differences estimate results.

Dependent variable	Corporate performance		Difference-in-differences
	Banking sector	Non-banking sector	
D_SSS	-434.701***	-147.450	-382.238***
	(-3.695)	(-1.255)	(-3.323)
Intercept	786.708**	1065.65***	985.316***
	(2.424)	(3.082)	(4.524)
Year effects	Yes	Yes	Yes
Control variables	Yes	Yes	Yes
Observations	140	126	266
Chi-squared P-value of BP test	0.000	0.000	0.000
Durbin-Watson	1.425	1.433	1.343

Note: All variable definitions are detailed in Annex 2. The value in parentheses is the z-value. *** and ** indicate significance at the 0.01 and 0.05 level, respectively.

Table 7 presents an overview of the difference-in-differences estimation results to assess the impact of the contribution-based social security scheme on banking and non-banking sector firms. The beta coefficient of D_SSS for banking sector firms is negative and significant at the 0.001 level. This indicates that the new social security scheme had a significant negative impact on the banking sector's performance. The results support the presence of psychological fear in the market and among employees in the banking sector after the enactment of the new policy. In contrast, the coefficient of D_SSS with corporate performance in the non-banking sector is negative, but the results are not significant. The results of the analysis can be explained as the psychological fear in the non-banking sector not having as noticeable an effect on corporate performance as in the banking sector. To see the actual difference in the impact of D_SSS for banking and non-banking firms, we conducted a difference-in-differences analysis using Equation 5. The coefficient of D_SSS in the difference-in-differences analysis is negative and significant at the 0.001 level, which indicates that the impact of the new policy is more dynamic in the banking sector than in the non-banking sector. This finding is similar to that of Zhang et al. (2021). As explained by Giorgi et al. (2017) and Saleem, Malik, and Qureshi (2021), the banking sector is highly sensitive to psychological fear caused by policy shock and externalities. The contribution-based social security scheme is directly related to financial benefits and social security related to health, family, retirement, and financial stability. Therefore, this policy shock affects multiple facets. This analysis has shown that this policy has more adverse effects on the banking sector than on other sectors.

To increase the realism and applicability of the results, we also present the counterfactual analysis, which provides a more robust regression analysis, as applied in previous studies by Li et al. (2022), Liu et al. (2021), and Cao (2020). To see the actual impact of the new policy on corporate performance, the analysis has excluded other control factors, and the results are presented in Figure 4. Figure 4 presents the counterfactual analysis graph indicating the treatment effects and unobserved trends after the policy enactment in 2018. The cutoff point was 2018, which is when the policy was enacted, and the analysis took the banking sector as a treatment group and the non-banking sector as a comparison or control group. The counterfactual analysis shows that the average treatment effect is -86.262, which is the original impact of the contribution-based social security scheme on corporate performance in Nepal.

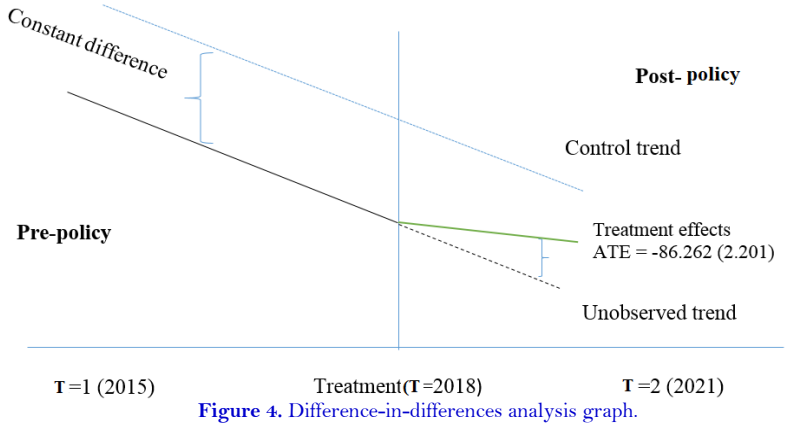

Figure 4. Difference-in-differences analysis graph.

To further justify the analysis result, we performed the Breusch-Pagan test, which gives a $x^2\ p\_value \leq 0.05$, indicating that the RE model is suitable to explain the impact of the variables. Similarly, cross-sectional dependency was detected through the Pesaran test, which provides a p-value of 0.142; as $p_{value} > 0.05$, the null hypothesis H0: no cross-sectional dependence is rejected, providing further evidence that there is no problem of cross-sectional dependence among the variables. Finally, we also conducted the test for normality of residual distribution, and the test result of $x^2\ p_{value} > 0.05$ (specifically, 0.068), providing a good sign of residual distribution and meaning that the analysis did not require further reformation of the data series. Based on these tests, we are confident that the results of the analysis can be generalized to large extent in the Nepalese context, as well as in economies of a similar nature across the world.

6. CONCLUDING REMARKS AND RECOMMENDATIONS

After the government of Nepal announced the implementation of a contribution-based social security scheme to cover all contributing sectors of labor, many sectors voiced opposition to their inclusion in the scheme. In particular, the banking sector was deeply opposed to the policy and has tried to amend some points that might adversely affect their usual retirement benefits. However, the government believed that this scheme would allow informal sector workers to benefit and would promote labor productivity. Thus, this paper attempted to analyze the impact of the new social security scheme on the corporate performance of the banking and non-banking sectors using panel data for the period 2015 to 2021 and employing the difference-in-differences method.

The findings of the analysis demonstrate that the policy has had a more adverse impact on the corporate performance of the banking sector than that of the non-banking sector. Based on the difference-in-differences analysis, the study has also suggested that psychological fear plays a larger role in the banking sector than in the non-banking sector because most employees in the banking sector already benefited from existing retirement plans and other related benefits. The impact of the contribution-based social security system is negative but not significant for the non-banking sector because the companies have to abide by a greater financial contribution to the social security fund, whereas before it was not mandatory for short-term employees, and the informal sector's labor force was completely unobserved under the previous social security system, but they are now also eligible to be listed in the system.

Although this analysis has revealed a negative impact on corporate performance, the contribution-based social security scheme will help reduce the financial burden on the government and also cover short-term and informal sector workers, which will help to ensure financial security and equality in the distribution of resources in the future. This policy can be a good initiative to achieve the country's poverty alleviation target by formalizing financial resource distribution and ensuring fundamental social security. Thus, the government of Nepal, the social security fund, and other agencies must enforce this policy, irrespective of the type of occupation, employment sector, or duration of employment. The psychological fear among the contributors and potential contributors of losing or not

being able to capitalize on the contributed funds in the future can be addressed through the mass media and channelized information flows from the government of Nepal and the social security fund.

Funding: This study received no specific financial support.
Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: All authors contributed equally to the conception and design of the study.

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Annex 1. List of selected samples.

S.N.	Name	FY	No. of observations
Banking sector			
1	Nabil bank limited	2015-2021	7
2	Nepal bank limited	2015-2021	7
3	Mega bank limited	2015-2021	7
4	NIC Asia bank limited	2015-2021	7
5	Sanima bank limited	2015-2021	7
6	NMB bank limited	2015-2021	7
7	Everest bank limited	2015-2021	7
8	Laxmi bank limited	2015-2021	7
9	Nepal SBI bank limited	2015-2021	7
10	Global IME bank limited	2015-2021	7
11	Prime commercial bank limited	2015-2021	7
12	Kumari bank limited	2015-2021	7
13	Civil bank limited	2015-2021	7
14	Century bank limited	2015-2021	7
15	Nepal commerce and credit bank limited	2015-2021	7
16	Pravu bank limited	2015-2021	7
17	Agricultural development bank limited	2015-2021	7
18	Standard chartered bank limited	2015-2021	7
19	Himalayan bank limited	2015-2021	7
20	Citizen bank international limited	2015-2021	7
Insurance sector			
21	Nepal life insurance co. limited	2015-2021	7
22	Prime life insurance co. limited	2015-2021	7
23	Asian life insurance co. limited	2015-2021	7
24	Gurans life insurance co. limited	2015-2021	7
25	Surya life insurance co. limited	2015-2021	7
26	National life insurance co. limited	2015-2021	7
27	Life insurance corporation co. limited	2015-2021	7
28	Everest general insurance co. limited	2015-2021	7
29	Himalayan general insurance co. limited	2015-2021	7
30	Lumbini general insurance co. limited	2015-2021	7
31	Prabhu insurance co. limited	2015-2021	7
32	NECO insurance co. limited	2015-2021	7
33	Premier insurance co. limited	2015-2021	7
34	NLG insurance co. limited	2015-2021	7
35	Shikhar insurance co. limited	2015-2021	7
36	Siddharth insurance co. limited	2015-2021	7
37	United insurance co. limited	2015-2021	7
38	Nepal insurance co. limited	2015-2021	7
	Total observations		266

Annex 2. Definition of variables.

i. Dependent variables

MPS: Marker price per share in Nepalese rupee as a proxy of corporate performance from market prospective.

DPS: Annual dividend per share in percent as a proxy of corporate performance from investors prospective.

ROA: The return on assets in percent as a proxy of corporate performance from assets quality prospective.

ii. Explanatory variable

D_SSS indicates whether to carry out contribution-based social security schemes for firm i on year t. We define post-policy enactment period D_SSS = 1, otherwise = 0. The contribution-based social security scheme was introduced in year 2017 and officially enacted from the fiscal year 2018.

iii. Control variables

EPS is annual earning price per share in Nepalese rupees.

MS is the number of shares outstanding as a proxy of market size in millions.

lnFS is the value of total assets of a firm as a proxy of firm size in natural logarithm of assets value in millions.

NP is net profit of firm as a proxy of firm profitability in millions of Nepalese rupees.

Industry is a dummy variable of corporate sectors used to categorize industry. Industry = 1 for banking sector, otherwise = 0.