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Investigation of the Pillars of Sustainability Risk Management as an Extension of Enterprise Risk Management on Palestinian Insurance Firms' Profitability

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Abstract: This research paper examined the simultaneous relationship between sustainability risk management (SRM) as an extension of Enterprise Risk Management (ERM) and Palestinian insurance firms' profitability, for the period spanning 2007Q1 to 2018Q4, by applying the panel dynamic (Generalized Method of Moments) GMM model. The literature was expanded by providing a comprehensive understanding of determining the pillars of ERM with the use of the factor analysis principle component method. The findings revealed that the firm's profitability positively corresponded to ERM1 implementation, which represents "management efficiency". In contrast, it shows negative correspondence to ERM2 implementation, which represents "control and ownership". Furthermore, there were slightly negative signs from managing the use of leverage and they were conservative in terms of loss reserves. The challenges of firms' profitability have negatively corresponded to emerging sustainability risks, such as political stability, that cause premiums written to show weak signs of excessive choice of risk or prices that are not met carefully. Interestingly, there is a positive relationship in the interaction between ERM2 implementation during the crisis period on insurance firms' profitability. There is a robust causal relationship from ERM to the profitability (either positive or negative). The reverse causality is also significant but to a lesser extent. Thus, the study recommends alignment more coherent with the implication of ERM as holistic risk according to the market characteristic towards the environmental perils leads to sustainable development and its segments to maintain the longer term of survival in the firms' performance.

Keywords: ERM pillars; insurance profitability; world crisis; emerging sustainability risks; political stability; and holistic risk

JEL Classification: C38; C33; G01; G32; E44

1. Introduction

In the last decade, an approach to Enterprise Risk Management (ERM) has become more important and grown significantly, particularly in the insurance sector. Many organizations have discovered the importance of ERM, as [1] observed that a better understanding is being provided to companies in managing their risks across the firm's business segments, which is to enhance the firm's return and achieve efficiency on their capital only if the company implements ERM. It is therefore important to integrate the ERM implementation as a holistic risk in all business units [2–4]. A similar view was shared by [5], who argued that a better decision is being taken by a firm if the company implements

an ERM process. This view was corroborated by [6], who opined that risk management is essential for the corporate organization, because it gives the firm support in the enforcement and review of their policies. In a recent Standard and Poor's (2016) research, the study has seen a huge global increase in the number of insurance companies participating in ERM activities, which leads to an increase in the number of insurers in the ERM categories. In particular, insurers improved ERM's maturity, including risk management in strategic (long-term) decision-making processes using the economic model, economic capital (ECM); and risk-based, this generally raised the risk awareness [7,8]. Moreover, the ERM implementation in the nonfinancial institution in the long-run will increase the firm's net savings, ensure the reduction in the firm's cash volatility, and decrease the possibility of the firm going into bankruptcy [9].

Most companies are already starting to evaluate sustainability risk management (SRM). This latest risk assessment definition is an extension of ERM. The ERM activities are structured to increase the interest of shareholders. In addition to the value of shareholders, the SRM concept includes environmental and social survival aspects. The definition of sustainable development is more broad-based and encompasses not just environmental risk concerns but also social responsibility problems as well as other important evolving challenges like national security, globalization, and reputational risk [10].

The needs and demands of ERM as an integrated and risk-based system for the entire company results from a number of changes due to some internal and external factors in the corporate environment, including a wider range of risks, increased risk complexity, interactions, and risk sources. The external factors include globalization, consolidation, and deregulation of industry, which is considered a significant factor, as well as regulatory pressure [11]. In addition, credit rating agencies began to implement internal enterprise risk management systems within the firm [12], because its implementation is essential as only the ERM information is not sufficient for the prediction of business performance [13]. In general, internal factors can be reduced through the risk management objective of strengthening the company's shareholder [1]. ERM is also managed by methodological and technological development progress, including best practices in quantitative risk assessment and information technology [14]. Essentially, the ERM system provides management and assessments to better track the company's global risk portfolios [15]. The significant influence of ERM on a firm's value was established [16,17] investigated and established its impact on the achievement of super performance by an organization. Similarly, Ref [18] argued that risk management has a great influence on organizational performance and suggested that the focus of the managers should be on the role of ERM so that an efficient performance will be achievable.

The endless trend of improvement and the significance of ERM are a result of a number of external changes in the social and economic environment, and internal changes in ERM perception [3,19]. The advantages and disadvantages of ERM implementation are discussed in detail in the literature. It is expected that the analysis of the total portfolio risk to the company in the whole process leads to share price volatility, or lower volatility of earnings and costs of foreign capital, and improvement of capital's dependencies risk [20], and an organization with the established dedicated risk committee that oversees its risk management record high cost efficiency and high returns [21]. These further enable the companies to benefit from synergies in the risk management process [22]. It is best to assess the maturity of risk management in the company for the entire company and assess their reliability and financial stability of insurance companies with external entities [23]. Therefore, it encourages insurance companies to participate in the ERM [8,24]. In addition, the increase in ERM implementation is largely due to regulatory pressure. For instance, after the financial crisis, European and American legislators introduced stricter regulatory requirements.

The ERM framework and its implementation are described to a large extent in the literature. For instance, several authors investigated a clear phase of ERM implementation based on questionnaires or interviews [2,15,25–28]. In addition, studies have investigated quantitative factors that determine a significant effect on the recognition (or level) of the ERM structure using

linear methods [2,11,12,22,29–31], while other quantitative studies focused on cost and executed the shareholder (company) after the implementation of ERM [12,15,21,29,32–35]. Nevertheless, the pillars of ERM in relation to financial stability have not been exhaustively investigated in the literature, most especially its application to Palestinian insurance firms' profitability. Thus, this study is aimed to fill the gap.

The history of the Palestinian insurance sector started after the first insurance law no. (20) became valid in 2005. The process of the sector improvements continues by making continuous changes, and amendments to the regulatory framework based on different self-assessment reports, and comparing them to the international practices and principles. The number of operating insurance companies in the year 2016 increased to 9 companies. The sector witnessed a positive change in previous years. For instance, the portfolio grew from USD 94 million in 2008 to USD 171 million in 2014. This percentage of growth indicates that the sector is growing to become a potential orientation for business investors. The sector contributes less than 0.5 percent to the Palestinian GDP. Premiums for the year 2017 are USD 254.580 million. Moreover, it is crucial to indicate that the sector is passing through many challenges which impacted its level of efficiency and services. The reasons for these challenges and problems are varied. Some companies are driving a rivalry on prices, leading to extreme price competition. This has been happening despite the market value and neglect of the service quality. Other companies have made violations to the rules and regulations. The performance of the governmental bodies was subject to big questions as regulations took a long period of time for developing them. The level of awareness among the community regarding the insurance industry was very low.

The pace of development is still lower than expected. More efforts need to be added to accelerate the process of sector change. This needs to be done so as to manage the level of risk in this sector. The level of risk is highly associated with different reasons including, but not limited to: turbulent political environment, tough competition in a very small market, very high leverage, volatility in profits, and low technical profits. All these have created the need at the Palestinian level to adopt a risk framework approach so as to prepare the sector for any potential challenges that might arise from a crisis. [36] confirmed that companies would have better operating performance when ERM is applied. However, the use of ERM is highly recommended for the Palestinian insurance industry, as it contributes to the improvement of the financial performance, including Return on Assets (ROA) and Return on Equity (ROE).

Our study has the following contributions to the literature: firstly, as far as we know, no study has empirically investigated the relationship between Sustainability Risk Management (SRM) as an extension of enterprise risk management (ERM) and Palestinian insurance firms' profitability. This analysis aimed to define common functions and differences between previous empirical research, to get a deeper and more comprehensive vision of sustainability risk management (SRM) as an extension of ERM, and its drivers in susceptible markets like the "*Palestinian market.*" Secondly, our study analyzed to what extent the interaction of ERM implementation during the financial crisis might affect the insurance companies' profitability. Thirdly, our study explored the pillars of an enterprise risk management implementation level formula, based on the Sponsorship Organizations of the Treadway Commission framework (COSO 2004), via applying the factor analysis principle component method. Subsequently, it investigated the impact of the pillars' co-movements on the insurance company's profitability, while considering the level of the financial stability in the Palestinian market. Fourthly, it sought to understand the political uncertainty and risks influence on the prevention of the economic units from predicting the future in an accurate manner. Based on these points, this study will reveal the effects of political instabilities in Palestine, together with endogenous and exogenous factors, and on the profitability of the insurance firms, and also determine the conditions required for the insurance sector to sustain its existence in a more efficient manner. This applies in addition to discussing the future prospects to enhance ERM processes by emphasizing the value of combining SRM and business

management practice and emerging sustainability risks in reducing both established and unknown threats to a long-term sector survival.

The remainder of this paper is organized as follows. Section 2 provides an overview of SRM and ERM literature. Section 3 provides a description of variables selection and methodology. Section 4 presents the econometric findings. Section 5 presents the conclusion and policy implication.

2. Literature Review and Hypothesis Development

2.1. Enterprise Risk Management (ERM)

The establishment of ERM companies strives to take into account the holistic risk of the entire organization, i.e., inclusion of all business units and types of risk, as opposed to the traditional method of silo and division risk management. Therefore, by using the company, ERM receives a full corporate assessment in relation to the overall risk of the company, and thus the possibility of using the natural range in the organization, taking into account the interdependence between different sources of risk and various business units. By focusing on managing and reducing global risk, companies can avoid excessive risk management costs [1,7,8,37]. Hence, in recent years, the importance of risk management throughout the business has increased considerably. Therefore, in 2004, Sponsorship Organizations of the Treadway Commission (COSO) published one of the most cited frameworks; defining ERM as "*a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives* (COSO 2004, p. 2)".

Furthermore, more arrogant systemic risks and success appraisal are given by an applied risk management approach to specifically address all options: development opportunities and mitigate from threats. It allows the company's total risk profile to be properly measured and risk control to be implemented in the strategic decision-making processes over the long run [8,38]. In order to meet the right risk management requirements throughout the company systems, companies must assign top management positions such as a Chief Risk Officer (CRO) or risk management committee as a technical function at the intermediate level [19]. Because of the importance of the company strategy, to order to maintain proper alignment and consistency in the ERM process, the ERM will be a core risk assessment mechanism coupled with an acceptable environmental understanding and a clear organizational risk culture [12,38]. The organization also includes risk managers dealing with both the management of the rider and the risk of finance facing their enterprises, nonoperational risks controlled by risk managers, and methods used to serve a greater set of risks [19,39]. Risk managers are now involved in dealing with a broader range of threats. From a historical point of view, passive retention of the unreal and financial risk was managed by another division of the firm. [40] Stated that "*enterprising risk managers are increasing their value and their influence on the employer's bottom line by looking beyond 'pure' risks to managing speculative risks*". Risk structure has also been influenced by the management of businesses. Therefore, risk managers must improve their financial skills to effectively cope with a broader range of threats required for management.

Internal to empirical studies, some studies have analyzed the impact of various factors, such as industry size and experience, experience in risk management, and leader in ERM participation [41]. [22] stated that companies of great economic importance were probably designated by the CRO. [11] improved after [22] and suggested that the employment of the CRO coincides with the decision to continue in accordance with the ERM program by any company. For instance, the Economist Intelligence Unit (2005) reported that many companies appoint a member to lead a team, often referred to as the CRO, to monitor the ERM process. [42] stressed that ERM requires significant support for leadership given its size and influence. [2] showed that the presence of a CRO is related to the upper stage of the ERM distribution. [43] stated that ERM implementation is associated with improving the firm's value, and on the other hand, significantly and positively affected by size and leverage of the

firm. [2] stated further that the ERM implementation phase is positively related to the presence of the chief risk officer, the independence of management, the main financial support and the financial director of ERM, the presence of the auditor of the Big Four, the market, firm size, education, and insurance sector. ERM also advocates for societal improvements from above and below. ERM asks for cultural adjustments. The Chief Executive Officer (CEO), CRO, and Risk Control Role will, therefore, foster risk reduction and a culture of enforcement [44]. For all types of companies, ERM was deemed appropriate and used. Its layout can then be tailored to the business community [14,45–47]. [22] showed that the use of ERM is related to the size of the company and its institutional ownership and using reinsurance and leverage has a positive influence. The method of adoption of ERM is essentially different, as each entity requires its own functionality to evaluate the application of the ERM system.

In addition to reducing the overall risk in the company (direct costs), it is assumed that the entire risk management approach avoids indirect costs [23]. In particular, enterprises with an ERM program will have sufficient vulnerability accessibility, thus reducing information asymmetry as a reason for being resolved nationally and for negotiations with external investors, authorities, and finally, the customer [12,38]. Further, rating agencies take into account the maturity of risk management in insurance companies as part of an overall assessment of companies and shares in the ERM awards [8]. Both decreased information asymmetry and higher degrees contribute to better capital market dynamics and fewer expected tracking costs. [19]. However, an important aspect of ERM is that a higher level of management provides a comprehensive understanding of the risk situation for the entire company. This improves understanding of the guide as a more efficient and risk-based target for strategic solutions and therefore invests several valuable projects with current net worth [7,8]. As a result, the company's value and performance can be increased, for example, due to the possibility of internal project financing and the volatility of additional gains, this can be reduced by reducing the risk of major cash-flow deficits [7,8,12,28]. Thus, ERM is a continuous, proactive, and comprehensive approach to financial risk management that ensures risk identification and management between companies to strengthen an effective response to interrelated interaction within the organization level (COSO 2004).

In addition to the previous empirical studies on the nexus between ERM practice and firms' performance, Florio and Leon [48] demonstrated that ERM practices did not only significantly influence the company's performance, but also assist in different kinds of risk exposure reduction. This view was corroborated by Lechner and Gatzert [38], who concluded in their study that successful implementation of ERM practices gives an opportunity to companies to improve on their values and also achieve efficient management of their risk. In a similar vein et al. [36] in their study established a significant positive relationship between the implementation of ERM and the company's performance. This is an indication that a company that practices ERM has the potential of having an increase in operational performance and increase in their earnings compared to those that did not implement ERM [17,18,21].

The empirical findings on the relationship between ERM practices and a firm's performance have been mixed. For instance, [15] found the appointment of a CRO as a determinant of positive market reaction on the equity of nonfinancial companies, but not for financial companies. In reference to insurance companies, [12] established a positive nexus between a company's value and the appointment of a CRO. Similarly, in the study of [49] using U.S. banks and insurance companies, the quality of ERM was established to be positively related to the company's value. The study was replicated by [50] using the European financial and nonfinancial firms and a similar result was achieved.

Most of the previous studies are tilted towards the implementation of ERM on the profitability and performance of an organization, to the neglect of the stability of the organizational finances, which is capable of mediating the relationship between ERM and a firm's profitability. It is opined in the literature that financial stability is synonymous with the capability of a company to generate profit, ensure the increment in the invested capital value, and the repayment of its liabilities [51]. [13] investigated the influence of ERM on business performance with the mediating role of financial instability and economic crises. The study found an insignificant increase in risk exposure during the world crisis that could influence the performance, and they concluded that ERM information does not significantly predict

or influence performance. Literature highlights various factors that could determine the stability of the financial position of a firm, among which are inflation, political instability or a world crisis [52]. The study demonstrated that the non-stability of an entity's financial position will negatively influence its performance and growth. The recent study by [53], corroborated with [52] study, which explored the influence of financial stability on organizational performance and established that a positive relationship exists between financial stability and organizational performance.

Based on the previously discussed literature, the following hypotheses have been developed:

Hypothesis 1 (H1): *There is a positive relationship between ERM 1 implementation and firms' profitability.*

Hypothesis 2 (H2): *There is a positive relationship between ERM 2 implementation and firms' profitability.*

2.2. Sustainability Risk Management (SRM)

The risk of sustainability is the emerging risk area of the 21st century and one of the key risk areas. Sustainability Risk Management (SRM) is emerging as a corporate strategy that aligns profit objectives with green domestic strategies and policies. Such strategies aim to reduce the harmful effects on the atmosphere by reducing the usage of renewable capital and rising production of the firms. The aim of SRM is to make this partnership as successful as necessary for a company to survive and expand while preserving the climate. The concept of SRM is often intended to tackle environmental and social risks. It is a central element of "sustainable development" in the regulation of environmental threats, fairness, and social justice [10]. Therefore, a newly emerging risk area, one of the key risk areas in the 21st century, is the scope of the risk management of sustainable development risk. Risk reduction for survival is also a concern considered to be a risk of "triple bottom line" (TBL) developed by John Elkington, the TBL can be articulated as follows = F+ E+ SR, where F (financial performance), E (environmental performance), and SR (social responsibility performance), and TBL = F—Risk costs of E—Risk costs of SR [54].

Furthermore, the current approach to risk management or ERM hardly assesses emergent risks and other risks that cannot be quantified due to unforeseen events. Indeed, the ERM strategy still does not include sustainability issues. Sustainable growth is motivated by the recognition of the environmental risks of most industries around the globe [34]. The change in market practices today has become a model for sustainability. "Sustainability risks are ethical concerns related to environmental and socio-economic impacts of our business transactions and the reputational risks they may entail". To achieve sustainable objectives, companies must develop a systematic process to identify sustainability risks [19]. Three key values include growth, capital return, and risk management, in the implementation of sustainable development. The regulators will levy high penalties on a business that does not handle environmental risk, and the company's image is saddled. The company's resource development and return are boosted by the company's sustainability approach [55]. Sustainability risk assessment discusses threats emerging from the fields of environmental and social accountability. SRM refers to the management of all social, environmental, and economic corporate risks [45]. SRM is certainly a mechanism that addresses and manages a large number of unknown and new risks emerging from sustainability issues in order to achieve lasting survival value. Because of the dynamics of the threats of which the company is faced, SRM will be incorporated into the ERM system [54], [56] both accepted this stance, indicating that sustainability as a vital aspect of the ERM should be implemented. The lack of participation in economic, social, and environmental facets of the three components of sustainability will contribute to poor results in the long term. SRM is definitely a process that addresses and manages a wide range of unknown and new risks arising from issues of sustainability to achieve long-term survival value. Depending upon the nature of market threats, SRM will be used as a part of the ERM [54]. [57] supported this view, which has suggested integrating sustainability as a critical part of the ERM. The lack of convergence of cultural, social, and environmental dimensions of the three components of sustainability implies inadequate long-term efficiency.

On the other hand, political stability or peace is especially relevant in the Palestinian economy in terms of competitiveness in the insurance sector. Economic analyses have shown intensively since the 1990s the impact of global uncertainty. This is attributed to a lack of information regarding the effect on the macroeconomic output of the democracy variable, while democracy is used for the intention of determining economic performance divergences between the developed world and developing countries as a political variable in the quest for variables in addition to economic variables. The agreement on the normative interpretation of this form of uncertainty was stopped by political turmoil from various influences in different countries. Nevertheless, in terms of international uncertainty, the opinions of [58] indicate that there are two realities in the fore: adjustments to the existing or nonconstitutional regime and civil unrest and political activity. The political uncertainty in a nation raises the financial risk first and consequently the risk in the economy, in other words, the market threat. The rising political risk affects the financial variables on the one side, the actual economic factors on the other side, which negatively affects the country's microeconomic and macroeconomic results.

Therefore, the overall structure of risk management has been revolutionized and subject to a preliminary review of the literature to support understanding and validation of this research field. The conceptual framework presented together with financial risk impacts, risk culture, and risk appetite will provide the basis for greater efficiency and mutual dependence on the elements of managing risk. Within the Enterprise Risk Management (ERM) system discussed earlier, the importance of a detailed description of the risk management process at the corporate level ensure the effectiveness of action plans with a view to achieving a favorable level of financial performance.

Consecutively, ERM then implements a process-based approach to risk management at the corporate level and justifies the linking of risk management processes and their associated consequences and dynamically contributes commitments towards sustainability. In addition, it reflects critical events that can change the company's financial stability and provide active risk-based action plans to ensure an effective financial risk management process. This contributes to the existing literature by highlighting the significance of integrating ERM and corporate sustainability practices in mitigating both known and unknown risks for longer-term survival in the industry, in addition to addressing the potential opportunities for improvement in the ERM practices; by using the principle component method to determine the best component of the ERM factor and their integration with the financial crisis "financial stability". In addition to political stability, unknown and new risks arise from issues of sustainability to achieve long-term survival value, especially in the Palestinian market. For these reasons, our study investigated the effect of the implementation of sustainability risk management (SRM) integrated with ERM practice on insurance company profitability, according to ERM pillars within the financial crisis, as explained in the following section.

In light of the previously discussed literature, the following hypotheses have been developed:

Hypothesis 3 (H3): *There is a negative relationship between political stability and firms' profitability.*

Hypothesis 4 (H4): *There is a positive relationship between the interaction of financial crisis and ERM 2 implementation and firms' profitability.*

3. Variables Selection and Methodology

3.1. Variables Description

The aim of this paper tended towards investigating the "*pillars*" of Enterprise Risk Management (ERM) and their effect on the profitability of Palestinian insurance companies. The selected sample, which was the Palestinian insurance companies, includes 6 companies out of the 7 that are operating in the Palestinian market, for the period spanning 2007 quarter 1 to 2018 quarter 4. Besides, concerning the profitability indexes "*dependent variables*" are return on assets (ROA) and return on equity (ROE), which have been widely used as profitability effectiveness measures. ROA indicates how effectively a company manages its assets to generate revenue, and it is also the income per unit of total assets. ROE

as an alternative measure of profitability is calculated by dividing net income into equity. It measures the earnings earned on each shareholder. A company with a high level of financial debt may have a higher risk, although these companies may experience a high return on equity. As a result, the ROE may sometimes be less exposed to the financial condition of companies in the real world. Another challenge with ROE is that it is affected by regulation. Furthermore, ROA and ROE are the most important measures of accounting information and the benefits of ERM on profitability in the latest literature [49,59]. As regards the independent variables, the pillars of ERM were created by applying the factor analysis "principal component method" based on [60]. As reported in Table 1, the determinants of ERM implementation level are included in the following formula:

ERM implementation level = f (CRO, RC, BOARDINDEP, BIG4, SIZE, LEVERAGE)

where presence of a Chief Risk Officer (CRO) is positively associated with the ERM implementation level. "CRO will be scored 1 when a chief risk officer is present and 0 if not present in the firm. No mention of a chief risk officer will result in a score of 0, thus negatively impacting the score on the ERM implementation level" [12].

Table 1. Factor analysis results, ERM pillars specifications.

KMO and Bartlett's Test			
Kaiser-Meyer-Olkin	0.533	Chiˆ2= 71.112	*p*-value 0.001

Principle component method "Extraction"			
Variables	Factor loading "Extraction"	Component	
		1	2
CRO	0.685	0.829	−0.054
RC	0.774	0.872	−0.117
Board independent	0.717	0.412	0.738
BIG4	0.566	0.510	0.553
Size	0.533	0.178	−0.708
Leverage	0.528	−0.169	0.548

Total Variance Explained			
Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	2.062	34.367	34.367
2	1.542	25.692	60.059

Since a risk committee is comparable to a CRO, the risk committee will be included. "RC will be scored 1 when a risk committee is present and 0 if not present in the firm. No mention of a risk commission will result in a score of 0, thus negatively impacting the score on the ERM implementation level" [61,62].

Board independence is calculated to represent the percentage of independent supervisory board members present. "No information on the independence of the supervisory board members will result in a score of 0 thus negatively impacting the score on the ERM implementation level" [2].

BIG4, the companies that have audited one of the Big Four auditing firms, are having the potential of implementing the ERM system over companies that have not audited any of the Big 4 members [2]. *"BIG4, scored 1 if one of the Big Four auditing firms audits the firm and 0 if another auditing firm does the firm auditing"*.

The size of the organization—the need for an effective risk management system in an enterprise will increase due to the size of enterprises. Larger companies may have more resources to implement

the ERM system. In several studies, the level of ERM implementation is higher in big businesses than for small businesses [2,12].

Leverage—according to the negative relationship exhibited with ERM, high scores of ERM lead to lower leverage [33,63]. Therefore, to incorporate this leverage, it is calculated as follows: 1/ total debt divided by total assets. Furthermore, the added value of our study included the most important variables in insurance companies that might cause risk taken. Loss reserves "*is the ratio of total losses paid out in claims plus adjustment expenses divided by the total earned premiums*" [64]. Without a quick and easy comparison of the profitability of different accounts, no insurance operation has any hope of success. Critically, we need to determine the relationship between income and expenses, which in terms of insurance mean the "*Premium for Claims.*"

Premiums written—the increase in the number of premiums is an increase in the number of new insurance policies, and the decrease indicates a smaller number of policies. It is defined as "*the sum of premiums written by an insurance company over the course of a period of time, fewer premiums ceded to reinsurance companies, plus any reinsurance assumed*" [64]. The reduction of nested premiums may be due to the fact that competitors enter the market and take part in the market, or this may be due to the fact that the premiums do not compete with the offers of other companies. Companies offering policies to more people can reduce the likelihood of a decline. Finally, inflation represents the financial stability of the external environment "*Inflation rate using the Consumer Price Index,*" and a world crisis; "*Dummy for the crisis period is denoted by giving 1 for the period span (2007Q3 to 2009Q2), otherwise 0,*" as reported in Table 2.

Table 2. Description of the selected variables.

Variables	Measure		Notation	Expected Sign
	Dependent variable			
Profitability	Return on Assets	Net income /Average total assets	*ROA*	*NA*
	Return on Equity	Net income /Average total equity	*ROE*	*NA*
	"Independent Variables"			
Pillars of ERM	*f(CRO, RC) "related to management"*		*ERM1*	+
	f(SIZE, LEVERAGE, BOARDINDEP, BIG4) "related to control and ownership of the firm"		*ERM2*	+
Size	*Log (total assets)*		*LZ*	+
Leverage	*1/(total debt ÷total assets) × 100*		*LV*	(−/+)
loss reserves	*(total losses paid out in claims + adjustment expenses/ total earned premiums)× 100*		*LR*	+
Premiums written	"*Is the sum of premiums written by an insurance company over the course of a period of time, fewer premiums ceded to reinsurance companies, plus any reinsurance assumed*".		*LPR*	-
Inflation	"*Inflation rate using the Consumer Price Index*".		*INF*	-
Political Stability Index	"*The index of Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism that measure the* emerging sustainability risks".		*PSI*	-
World Crisis	"*Dummy for the crisis period by giving 1 for the period span (2007Q3 to 2009Q2), otherwise 0*".		*Dumc*	-

The reported results in Table 1 reveal that a KMO score of 0.533 is adequate and usable for further analysis, thus the null hypothesis of Bartlett's test that the correlation matrix is an identity matrix [65,66]. Bartlett's test is statistically significant at the 1% level; therefore, the null hypothesis

is rejected. This implies inequality of the variance among the dataset. Moreover, the extraction results show adequate factor loading with more than 0.50 for all variables. Meanwhile, the results indicate the variables extracted to two components: Component "1" represents CRO, and RC by variance explained 34%, and component "2" represents board independents, BIG4, size, and leverage by variance explained 25% and 60% as cumulative for two components. Therefore, in our study, we categorized the ERM pillars as follows: ERM1 = f [CRO, RC] related to management. ERM2 = f [BOARDINDEP, BIG4, SIZE, LEVERAGE] related to control and ownership of the firm.

Descriptive statistics for the tested variables are presented in Appendix A, which also shows the sampled Palestinian insurance companies. On average, the firms in our sample have a ROA of 0.042% and ROE of 0.08%, While, during crisis period 2007Q3-2009Q2, have ROA of 0.037% and ROE of −0.084. On average, an ROA and ROE have high mean differences during the crisis period. Turning to the independent variables, firms' specific variables (as seen from the mean and median values), ERM pillars, and control variables *"firm size, leverage, loss reserves, and written premiums,"* in addition to inflation measures, indicate that heterogeneity among the firms in our sample exists. Furthermore, the correlation matrix was used in order to ensure that the results are not contaminated by multicollinearity. The reported results in Table 2 confirm the absence of multicollinearity in the different models.

3.2. Models Specification and Methodology

Our model is specified to investigate the determinants of ERM, using the internal determinants of ERM and external factors, the changes of the price level, and the effect of the world crisis as a control variable, and their influence on the insurance company's profitability. In order to control for individual heterogeneity *"unobserved firm-specific effects,"* a GMM panel mechanism was utilized with the observation of each firm from 2007 Q1 to 2018 Q4. Also, a panel method was used to control the endogeneity of firms' profitability (ROA and ROE). This procedure of GMM estimator used to make adjustments was developed by Arellano and Bond [67]. The firm's profitability equation is based on the dynamic model, which is expressed as a linear form:

$$Y_{i,t} = c + Y_{i,t-1} + \sum_{s=1}^{s} \beta_s X_{it}^s + \sum_{f=1}^{f} \beta_f X_{it}^f + \varepsilon_{i,t}, \quad \varepsilon_{it} = v_{it} + u_{it} \tag{1}$$

where $Y_{i,t}$ is ROA and ROE of firm i at year t, X_{it}^s represents internal determinants of the firm *"firm-specific,"* ERM, and its pillars, X_{it}^f represents external factors, $\varepsilon_{i,t}$ exhibits stochastic error term-related influence that may influence firms' profitability. This is a one-way component regression model, where $v_{it} \sim N(0, \sigma_v^2)$ and independent of $u_{it} \sim (0, \sigma_u^2)$, and the models are expressed as follows:

$$Y_{i,t} = Y_{i,t-1} + \beta_1 ERM1_{i,t-1} + \beta_2 LZ_{i,t} + \beta_3 LV_{i,t} + \beta_4 LR_{I,t} + \beta_5 LPR_{It} \\ + \beta_6 INF_{It} + \beta_7 Dumc_{it} + \beta_8 PSI_{it} + \varepsilon_{it} \tag{2}$$

$$Y_{i,t} = Y_{i,t-1} + \beta_1 ERM2_{i,t-1} + \beta_2 LZ_{i,t} + \beta_3 LV_{i,t} + \beta_4 LR_{I,t} + \beta_5 LPR_{It} + \beta_6 INF_{It} \\ + \beta_7 Dumc_{it} + \beta_8 PSI_{it} + \beta_9 (Dumc * ERM2_{it}) + \varepsilon_{it} \tag{3}$$

Equation (2) represents the first ERM pillar (ERM1) that related to management, while Equation (3) represents the second ERM pillar (ERM2) related to control and ownership of the firms, with the co-movement of the internal and external factors that might have a role on the changes in insurance profitability.

4. Discussion of the Results

Because ERM was potentially demonstrated from a theoretical and empirical point of view that it creates values for companies, as emphasized in the previous section, it is essential to examine factors that affect the company's decision regarding participation in the ERM; by investigating the pillars of ERM

as follows: ERM1 related to the efficiency of management, and ERM2 related to control and ownership. For this purpose, Tables 3 and 4 provide the results from the model analysis. Concerning the first ERM pillar as reported in Table 3, the result reveals that there is a positive relationship between ERM1 and insurance profitability, and statistically significant at the 5% level. On average, it increases the firm profitability by 3.16%; specifically, 0.32% on ROA, and 6% on ROE. This indicates that the management pillar has more effect to increase shareholder wealth. This gives a positive sign of ERM1 implementation on the insurance firm's profitability in terms of the management side. So far, the companies with a high proportion of risk committees are more likely to put in place adequate internal control mechanisms, as institutional investors usually ask for more information about the company's risk situation, and are more influential in contrast to individual shareholders [22]. Meanwhile, there is a positive relationship between firm size (LZ) and ROA, approximately by 1.0% and statistically significant at the 1% level. This result indicates that increasing the scale and complexity of risk, as well as the integration of new sources of risk, contribute to efforts in the area of ERM implementation. Furthermore, large companies have a rather institutional size to support the administrative costs of the ERM program and the possibility of allocating fixed costs to the costs of risk management in various companies' units [8,23]. However, firm size (LZ) has a negative impact on ROE by 46%, and this refers to "*Larger firms have a greater risk of financial distress and more volatile operational cash flows resulting in a greater likelihood of ERM adoptions*" [11,31]. Consequently, there is a negative relationship between leverage (LV) and firm profitability; on average, 1.1% on ROE and statistically significant at the 1% level. This implies that leverage can be increased by improving risk assessment, with the attendant effect on the increases of the probability and expected costs for lower-tail results and financial difficulties. Therefore, companies with broader leverage use ERM programs to reduce this probability [33].

Table 3. The profitability correspondence to ERM 1 implementations in insurance firms.

	Model 1 ROA	**Model 2 ROE**
C	0.0192 [0.87]	0.9262 [2.88]
π_{t-1}	0.8964 [84.44]**	0.6632 [37.93]**
ERM1	0.0032 [1.97]*	0.0600 [2.56]*
LZ	0.0109 [2.10]*	−0.4606 [−6.01]**
LV	−0.00027 [−0.80]	−0.0112 [−20.96]**
LR	0.0168 [3.75]**	0.4662[7.13]**
PR	−0.0042 [−6.56]**	−0.0043[−0.43]
INF	−0.0011 [−2.95]**	−0.0184 [−3.64]**
PSI	−0.0227 [−4.19]**	−0.2914 [−3.73]**
Dumc	−0.0077 [−3.86]**	−0.2144 [−7.37]**
Sargan test[a]	Chi^2(224) = 555.00	Chi^2(224)= 511.70
AR (1)[b]	Z = 2.89 P−v = 0.154	Z = 0.45 P−v =0.656
AR (2)[b]	Z = 2.02 P−v = 0.444	Z = 0.39 P−v = 0.674

* and ** denote a significant level at 5% and 1%, respectively. Z-statistics in []. a The test for over-identifying restrictions in GMM dynamic model estimation. b Arellano-Bond test that averages auto-covariance in residuals of order 1, and 2 is 0 (H_0: no autocorrelation).

Table 4. The profitability correspondence to ERM 2 implementations in insurance firms.

	Model 1 ROA	Model 2 ROE
C	−0.0089 [−0.38]	1.4616 [4.20]**
π_{t-1}	0.8904 [82.68]**	0.6259 [34.62]**
ERM2	−0.0044 [−3.58]**	−0.0259 [−1.45]**
LZ	−0.0039 [−0.79]	−0.4191 [−5.62]**
LV	−0.0012 [−3.75]**	−0.0124 [−2.73]**
LR	0.0105 [2.55]*	0.3788 [6.21]**
PR	−0.0041 [−6.23]**	−0.0224 [−2.20]**
INF	−0.0011 [−3.07]**	−0.0236 [−4.61]**
PSI	−0.0221[−4.07]	−0.3410 [−4.29]**
Dumc*ERM2	0.0003 [1.12]*	0.0402 [9.19]**
Dumc	−0.0065 [−2.55]*	−0.0014 [−0.04]
Sargan test[a]	Chi^2(224) = 553.61	Chi^2(224) = 515.67
AR $(1)^b$	Z = 1.61 P−v = 0.108	Z = 0.77 P−v = 0.440
AR $(2)^b$	Z = 1.15 P − v = 0.521	Z = 0.72 P−v = 0.471

* and ** denote a significant level at 5% and 1%, respectively. Z-statistics in []. a The test for over-identifying restrictions in GMM dynamic model estimation. b Arellano-Bond test that averages auto-covariance in residuals of order 1, and 2 is 0 (H_0: no autocorrelation).

Furthermore, the result shows a positive relationship between loss reserves (LR) and firm's profitability, on average by 24.15% and statistically significant at the 1% level. However, the result indicates a negative relationship between premiums written (PR) and firm's profitability, approximately by 0.42% on ROA, 0.43% on ROE, and statistically significant at the 1% level. This indicates that there is an excessive or uncoordinated increase in premiums or other exacerbated threats that may endanger the company's existence [68]. Insurance companies may have weak financial positions if the guarantee is excessive or if the choices of risk or prices are not met carefully. As regards financial stability, which is represented by changes in the prices' "*inflation*," it has a negative impact on firm profitability, on average by 0.98% and statistically significant at the 1% level. Consequently, the reported results show that a firm's profitability negatively corresponds to the shock of the financial crisis and is statistically significant at the 1% level. More diversified companies should already benefit from self-development, and therefore additional benefits from ERM may be negligible. Increasing the complexity of companies may lead to the loss of efficiency and effectiveness of the ERM system [7].

Concerning the second ERM pillar as reported in Table 4, the result reveals that there is a negative relationship between ERM2 and insurance firms' profitability, and it is statistically significant at the 1% level. On average, the firms' profitability decreases by 1.52%; specifically, 0.44% on ROA, and 2.6% on ROE. This indicates slightly low control and ownership as components of ERM2 and has more effect to decrease the shareholder wealth. This gives a negative sign of ERM2 implementation on the insurance firm's profitability in terms of control and the ownership side as components of ERM2. So far, this indicates that companies with a small share of institutional shares are more likely to be forced to introduce inadequate internal control mechanisms, as institutional investors usually request additional information about the company's risk situation and, in addition, they have more influential individual shareholders [12]. Meanwhile, there is a negative relationship between firm size (LZ) and ROE, approximately by 0.42 and statistically significant at the 1% level. This refers to "*Larger firms have a greater risk of financial distress and [are] more volatile to operational cash flows resulting in a greater likelihood of ERM adoptions*" [11,31]. Also, these results indicate that an increase in the size of the

company will probably be related to the problems of the agency; for example, asymmetry information or conflicts between interested groups under the contract in the company. Further, larger companies are associated with higher bureaucratic and regulatory requirements [38,69]. Consequently, there is a negative relationship between leverage (LV) and firm profitability, on average 0.12% on ROA, 1.24% on ROE, and statistically significant at the 1% level. This reveals that leverage can be increased by improving risk assessment. This leads to decreases in the probability and expected costs for lower-tail results and financial difficulties. Therefore, companies with broader leverage use ERM programs to reduce this probability [33].

Furthermore, the result as presented in Table 4 shows a positive relationship between loss reserves (LR) and the firm's profitability, on average by 19.5% and statistically significant at the 1% level. However, the result indicates a negative relationship between premiums written (PR) and firm's profitability, approximately by 0.41% on ROA, 2.24% on ROE, and statistically significant at the 1% level. This indicates that there is an excessive or uncoordinated increase in premiums or exacerbated other threats that may endanger the company's existence [68]. Insurance companies may have weak financial positions if the guarantee is excessive and if the choice of risk or prices is not met carefully. Also, this indicates an insufficiency to cover risk from the available financial resources; therefore, being excessively obsessive about the increase in the volume of the premiums written, especially in an economic downturn, may lead to the negligence of other important targets and self-destruction and causes insolvency [70].

In respect of the financial stability which is represented by changes in the prices' "*inflation,*" it has a negative impact on firm profitability, on average by 1.24% and statistically significant at the 1% level. Consequently, world crisis (Dumc), as indicated in the reported results, shows that a firm's profitability negatively corresponded to the shock of the financial crisis and is statistically significant at the 1% level, while there is a positive relationship in the interaction between ERM implementation during the crisis period on insurance firms' profitability, and it is statistically significant. More diversified companies should already benefit from self-development; therefore, additional benefits from ERM may be negligible. Increasing the complexity of companies may lead to the loss of efficiency and effectiveness of the ERM system [7]. Furthermore, the estimated sign of leverage and premiums written are negative in all models. In this context, the premiums written variable having higher values than the leverage variable shows that the negative effect of political instability is higher on insurance firms. For this reason, this effect is influential on the sign of leverage and premiums written. In this context, the high negative effect of political instability on insurance firms causes these firms to increase leverage and premiums written. However, depending on the high amounts of equity capital of the insurance firms, the high value of leverage and premiums written may lead to profitability decreases by causing a conflict with the proposition of "more risks, more revenues," which is used frequently in the field of finance. In such a situation, it may be claimed that firms limit their productions for the purpose of decreasing moral hazard and reverse selection risk.

Therefore, these consequences of the relationship are related to the typology of financial risk and the risk management processes were supported as significant from the point of view of both theory and a practical point of view. Thus, ERM provides a holistic view of risk typologies' integration of risk management processes with corporate strategic plans regarding paying general attention to the risk of falling and rising. In this way, ERM increases the importance of different types of risk. Table 5 shows the hypothesis testing results.

Table 5. Hypothesis testing results.

Hypothesis	Result
H1: There is a positive relationship between ERM1 implementation and firms' profitability.	Accepted
H2: There is a positive relationship between ERM2 implementation and firms' profitability.	Rejected
H3: There is a negative relationship between political stability and firms' profitability.	Accepted
H4: There is a positive relationship between the interaction of financial crisis and ERM 2 implementation and firms' profitability.	Accepted

5. Conclusions and Policy Implication

This study investigated the ERM pillars. Firstly, the ERM1, which is related to the efficiency of the management, shows a positive sign on insurance firms' profitability. In contrast, ERM2, which is related to control and ownership, revealed a negative sign on insurance firms' profitability during the selected period 2007Q1 to 2018Q4. Secondly, the result indicates that the insurance firms' profitability have negatively corresponded to premiums written in the Palestinian insurance companies. In other words, it indicates a weak sign of their financial positions due to excessive choice of risk, or prices are not met carefully. Also, this indicates an insufficient financial position to cover risk from the available financial resources. Interestingly, there is a positive relationship in the interaction between ERM implementation during the crisis period and insurance firms' profitability.

This article offers an overview of resilience when discussing the future prospects for better risk reduction strategies for organizations (ERM). The integration of sustainable development into risk management can be expected to offer companies the opportunity to boost their profit, as well as to demonstrate environmental and social awareness, using various literature. The ERM research findings indicate that flaws in ERM procedures are scientific facts. The study proposed that the incorporation of ERM into sustainability would boost not just the production of revenue but also the longevity of an organization. The incorporation of sustainability into the business strategy will also enable Palestinian insurance firms' to better handle economic, social, and financial risks. Essentially, sustainable development fosters a climate of the financial market, ensuring the long-term survival of the company. As a result, ERM measures are assessed and monitored to give an early warning system indicating additional risks that are associated with the processor related to market imperfections. In addition, it provides a management mechanism that ensures uninterrupted operation of the control process. This provides quick risk treatment options to prevent further unforeseen breaches of risk. Therefore, the companies must adopt the concept of monitoring the adopted ERM structure, to be used explicitly in relation to their strategic goals. Also, the negative effect of political risk is found to be strong. According to this result, it can be argued that implementations towards political stability should be worked out as soon as possible for the stability of the profitability, in terms of the financing of the real sector more favorably and the requirement of financial stability. Subsequently, in line with the previous understanding and implications of ERM, it ensures concentration on the components of the financial risk typology and its interactions, indicating that general attention should be given to the specific aspects of the risk management process. This conceptualization, resulting from the fundamental principles of the integrated structure, justifies the answers given by advisory experts in connection with the complex perception of risk management components.

The main implication of this study is for the top management of insurance companies in Palestine to give adequate attention to the concept of ERM and monitor the financial stability of the company so as to improve on their profitability. It is not a gainsaying that every company is aimed at earning a profit, and, as such, instead of hoping for big leverage that may increase their risk, a less risky attempt to increase their profitability as an insurance company should be considered. Because ERM does not automatically yield results until the top management makes the policy, it is suggested that insurance firms in Palestine should consider a more financially literate officer to be in charge of the CRO unit for the implementation of their strategies and policies. It is also recommended that the managers should

ensure that all the employees in the company receive requisite training to understand the nature of risk associated with their job's role. This is to enable the individuals to manage effectively the risk involved in their role and appreciate the organization's risk tolerance as highlighted by the management. In all, the development of policies on ERM and its effective coordination of the company's activities will be of significance to the establishment of the company's capability for risk management.

Limitations and Suggestions for Future Research

Nevertheless that our research contributes to the literature through the expansion of the research concerning the relationship between ERM pillars and firm profitability in the insurance companies, it is still subject to a limitation which gives room for further study. Our focus was on the insurance firm in Palestine. Thus, the model can be replicated in other emerged and emerging regions. In addition, a comparative study between the developed and developing economies market for more useful results exploration will make a significant contribution.

Appendix A

Table A1. Descriptive statistics for the selected variables.

Stats	ROA	ROE	ERM1	ERM2	LZ	LV	LR	PR	INF	PSI
Mean	0.042	0.080	0.2	5.328	7.638	5.290	7.00	0.596	2.747	−1.98
Median	0.026	0.065	0	4.716	7.711	1.874	7.022	0.288	2.436	−1.89
SD	0.068	0.564	0.40	4.720	0.302	18.467	0.326	1.292	2.315	0.0947
Min	−0.134	−2.927	0	−3.991	6.740	−32.954	5.576	−0.476	−2.677	−2.171
Max	0.264	2.796	1	30.544	8.254	104.987	7.628	8.029	8.597	−1.776
Descriptive statistics during crisis period 2007Q3–2009Q2										
Mean	0.037	−0.084	0.25	7.280	7.483	13.660	6.671	0.337	5.939	−2.014
Median	0.020	0.045	0	4.124	7.686	1.458	6.696	0.153	7.032	−2.007
SD	0.072	0.438	0.437	7.837	0.335	30.602	0.391	0.670	2.610	0.0197
Min	−0.072	−1.618	0	3.306	6.740	−0.003	5.576	−0.476	1.565	−2.045
Max	0.222	0.307	1	30.544	7.770	104.987	7.128	2.096	8.597	−1.989

Table A2. Correlation matrix.

	ROA	ROE	ERM1	ERM2	LZ	LV	LR	PR	INF	PSI
ROA	1.00									
ROE	−0.045	1.00								
ERM1	0.077	0.008	1.00							
ERM2	−0.048	−0.406	−0.046	1.00						
LZ	0.392	−0.002	−0.045	−0.272	1.00					
LV	0.070	0.410	−0.074	0.092	−0.261	1.00				

Table A2. *Cont.*

	ROA	ROE	ERM1	ERM2	LZ	LV	LR	PR	INF	PSI
LR	0.277	0.135	0.231	−0.174	0.304	−0.181	1.00			
PR	−0.421	−.445	−0.081	−0.008	−0.378	−0.029	−0.030	1.00		
INF	−0.156	−0.173	−0.175	0.108	−0.202	0.122	−0.382	0.048	1.00	
PSI	−0.094	−0.046	0.044	0.016	0.0003	−0.009	0.042	−0.066	−0.134	1.00

Table A3. Dumitrescu and Hurlin Granger causality.

Null Hypothesis	Z-bar
ERM1 does not Granger-cause ROA	0.15914**
ROA does not Granger-cause ERM1	0.02504
ERM2 does not Granger-cause ROA	3.0174 **
ROA does not Granger-cause ERM2	2.3880*
LZ does not Granger-cause ROA	3.8026 **
ROA does not Granger-cause LZ	−0.2318
LV does not Granger-cause ROA	8.1732 **
ROA does not Granger-cause LV	10.8276**
LR does not Granger-cause ROA	4.5906**
ROA does not Granger-cause LR	7.3141**
RP does not Granger-cause ROA	8.8476**
ROA does not Granger-cause RP	9.5526**
INF does not Granger-cause ROA	1.7315
ROA does not Granger-cause INF	6.7585**
PSI does not Granger-cause ROA	3.6606**
ROA does not Granger-cause PSI	4.3394**
ERM1 does not Granger-cause ROE	0.01451*
ROE does not Granger-cause ERM1	0.00770
ERM2 does not Granger-cause ROE	4.0598**
ROE does not Granger-cause ERM2	3.3314*
LZ does not Granger-cause ROE	3.9456**
ROE does not Granger-cause LZ	3.2513*
LV does not Granger-cause ROE	8.4491**
ROE does not Granger-cause LV	9.3404**
LR does not Granger-cause ROE	5.3417**
ROE does not Granger-cause LR	9.8300**
RP does not Granger-cause ROE	11.0075**
ROE does not Granger-cause RP	6.7802**
INF does not Granger-cause ROE	0.5795
ROE does not Granger-cause INF	7.4712*

Table A3. *Cont.*

Null Hypothesis	Z-bar
PSI does not Granger-cause ROE	4.4234**
ROE does not Granger-cause PSI	2.5319*

* and ** denote a significant level at 5% and 1%, respectively.

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