ECONOMIC CONSEQUENCES OF FIRE WITHIN COMPANIES

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Abstract: Consequences of fires are not limited to material damage, but encompass a wide range of direct and indirect economic impacts that affect the liquidity, productivity, profitability and long-term market position of companies. Fire insurance is one of the key mechanisms for reducing economic risk, enabling companies to increase their resilience and ability to recover from fire. The aim of the research is to gain knowledge about possible differences between companies of different sizes in terms of expected direct and indirect economic consequences, as well as the impact of fire insurance on the level of expected economic consequences from fires in companies. The general research hypothesis assumes that there are differences in the expected direct and indirect economic consequences of a fire between companies of different sizes and different fire insurance status, and that fire insurance has an impact on the degree of expected economic consequences from it. The research sample consists of 60 managers of companies divided by size into 20 small, 20 medium and 20 large, which have different insurance status. The data were collected through a survey questionnaire and analyzed with descriptive statistics, ANOVA and linear regression. The results of the research showed that there are statistically significant differences in the expected direct economic consequences between small ($M = 48.80$; $SD = 2.876$), medium ($M = 44.70$; $SD = 3.629$) and large companies ($M = 39.10$; $SD = 4.077$) ($F = 37.375$; $p<0.01$). A statistically significant difference was also found in the indirect economic consequences, where small companies ($M = 62.00$; $SD = 5.858$) expect significantly greater consequences than medium ($M = 55.90$; $SD = 4.789$) and large ($M = 46.40$; $SD=4.740$) ($F = 46.518$; $p<0.01$). The results indicate a statistically significant positive impact of fire insurance on expected economic consequences ($F=88.770$; $p<0.01$; $B=20.149$; $\beta=0.778$), meaning that insured companies have lower expected losses and a perception of better resilience after a fire. The findings of the research indicate that the size of the company is a significant factor influencing the expected losses, with smaller companies expected to have higher direct and indirect economic consequences, while larger companies more appropriately distribute risk exposure, invest in preventive measures and insurance, which results in increased stability and reduced economic vulnerability in the event of a fire. Although most companies are aware of the importance of insurance, the results indicate that smaller companies are less likely to be insured, as they perceive insurance as an additional cost, which increases their exposure to fire risk. The research contributes to a better understanding of the factors that determine the economic vulnerability of companies and emphasizes the need for a systematic approach to fire risk management, investment in fire protection and insurance as a strategic mechanism for preserving economic stability.
Keywords: fire, direct economic consequences, indirect economic consequences, company size, insurance

1. INTRODUCTION

Fires represent one of the most significant threats to the economic stability of companies and the national economy as a whole. Their consequences are not limited to the physical destruction of property, but encompass a wide range of economic impacts that manifest themselves in the form of direct and indirect losses (Ѓорѓиев, 2018). The economic consequences of fires depend on the intensity and scope of the event, the size of the company, the type of industry it belongs to, the level of protection and insurance, as well as the company's ability to react and recover (Spasić, 2003). In this context, fire safety is a key element of corporate risk management, since timely prevention, education and technical protection can significantly reduce the economic consequences and the time needed for the company to recover.

Fire safety

Fire safety is a key segment in risk management and sustainable operation of companies. It encompasses all preventive and reactive measures that aim to prevent the occurrence of a fire or minimize its consequences. Efficient detection, alarm and extinguishing systems, as well as regular employee training, are essential elements in reducing risk. Investments in fire protection should not be seen as a cost, but as a strategy for protecting the company's capital and economic stability. Research shows that organizations with developed fire safety programs have significantly lower direct and indirect economic losses, recover faster after an event and more easily maintain market trust. Thus, fire safety is not only part of corporate responsibility, but also a key factor for long-term competitiveness and financial resilience (Закинчак & Ледяйкина, 2020; Ѓорѓиев, 2018).

Direct economic consequences

Direct consequences are those that occur immediately after the fire and can be measured in material, financial and operational losses. They are most often associated with the destruction of working capital, damage to equipment, reduced production and increased costs for sanitation (Novaković et al., 2018).

Physical damage refers to the complete or partial destruction of buildings, production lines, warehouses, vehicles, equipment, etc. In industrial facilities, such damage can reach millions of dollars, especially when it comes to complex technological systems. If the company does not have adequate insurance, a fire can result in complete insolvency and cessation of operations (Medved & Springer, 2022). Fires require large financial expenditures for rehabilitation, repairs, and the purchase of new equipment. Companies most often cover these costs through their own reserves, insurance claims, or loans, which reduces their liquidity. If insurance does not cover all types of damage (for example, production downtime), the company faces serious financial difficulties. Research shows that companies with good fire prevention and insurance have a 60-70% faster recovery period (Popović et al., 2012; Hassanain, 2022). Fire often causes a complete shutdown of production, which can last for months. During this period, additional losses occur due to supply disruptions, unfulfilled contracts, and loss of market share. Companies that are part of a supply chain also affect other business partners (Khan et al., 2021).

Indirect economic consequences

Indirect economic consequences are long-term in nature and are often not immediately visible. They refer to the costs and losses resulting from disrupted operations, loss of human capital, and the need to remediate the wider consequences (Vujović, 2009).

Losses in working time are one of the most common indirect consequences. They occur due to the absence of injured workers, the engagement of firefighting personnel, production downtime, as well as activities to clean up and remediate the consequences. In practice, these losses are often not fully recorded, although their effect on overall productivity can be significant (Qin et al., 2024).

Fires also cause indirect costs that fall on the shoulders not only of the company, but also of state funds. In our modern practice, there are types of costs that take a significant place within the total costs of the company. The costs of the pension and disability insurance fund arise from the rights exercised by direct producers in the event of reduced or loss of working capacity (disability), altered working abilities and physical damage. The costs of the health insurance fund arise in the event of the use of health care when some of the insurance risks occur, i.e. when an injury occurs and occur in several forms (Bundalevski et al., 2022; Ѓорѓиев & Коцева, 2016). The material consequences of the fire are particularly burdened by property and personal insurance funds, given the basic motive for their formation. The funds of local self-government bodies can also be treated materially. This entire financial burden is borne by the state budget and the general economic balance (Siraj et al., 2023).

A company that has suffered a fire often also faces a loss of market confidence. The reduced ability or complete inability to deliver products or services on time leads to the loss of customers and partners. Reputation, especially in competitive markets, is difficult to restore, and its damage has a long-term economic effect (Martell, 2001).

Fires can have a multiplier effect on the entire local economy. Destroyed capacity can lead to the interruption of deliveries to other companies, which creates a "domino effect". In addition, the local community can suffer losses due to reduced employment and a drop in income. This impact is also transmitted to the regional level, especially in cases where the fire occurred in an industrial zone or strategic capacity of public interest (Siraj et al., 2023).

2. RESEARCH METHODOLOGY

Aim of the research

The main problem addressed by the research is: Do company size and insurance affect the expected direct and indirect consequences of fire?

The aim of the research is to examine whether there is a difference in the expected economic consequences of fires among companies of different sizes, as well as whether insurance has an impact on the expected losses and the perception of the ability of companies to recover from fire. The research fills the gap in the literature for a systematic examination of the expected economic consequences of fires among companies of different sizes in a local context. The research also highlights the importance of insurance as an investment mechanism that reduces the perception of potential losses and improves the one related to the ability of the company to recover from the economic consequences caused by fire.

Research hypothesis

General research hypothesis: There are differences in the expected direct and indirect economic consequences of fire between companies of different sizes and different fire insurance status and fire insurance has an impact on the level of expected economic consequences from it.

Hypothesis 1. There are differences in the expected direct economic consequences of fire between companies of different sizes.
Hypothesis 2. There are differences in the expected indirect economic consequences of fire between companies of different sizes.
Hypothesis 3. Fire insurance affects the level of expected economic consequences from fire in companies.

Materials and methods

The research design is cross-sectional observational. For the purposes of the research, the methods used were document analysis and a survey. The techniques used in the research were surveying and scaling.
The research was conducted among managers from a total of 60 companies, divided by size: 20 small, 20 medium and 20 large companies, with different insurance status.
Independent research variables are: company size (small, medium, large) and fire insurance status (yes/no), and dependent variables are: direct economic consequences (physical damage, financial costs and liquidity, operational and logistical disruptions) and indirect economic consequences (revenue and profitability, reputation and market trust, human resources and productivity, supply and local impact).
The research was conducted during August 2025 using a survey questionnaire posted on google. forms and distributed online. The collected data was processed and analyzed with the SPSS software package.

Research results

Table 1 contains the descriptive statistical results for the expected direct economic consequences caused by fire for companies of different sizes. Table 2 shows the ANOVA result for the statistical significance of the difference in arithmetic means for companies of different sizes.

Table 1. Expected direct economic consequences of a fire in companies of different sizes

Direct economic consequences

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Small company	20	48,80	2,876	,643	47,45	50,15	43	53
Medium company	20	44,70	3,629	,811	43,00	46,40	40	52
Large company	20	39,10	4,077	,912	37,19	41,01	34	48
Total	60	44,20	5,323	,687	42,82	45,58	34	53

Source: Author's research

Table 2. Difference between companies of different sizes in terms of expected direct economic consequences of a fire

Direct economic consequences

ANOVA	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	948,400	2	474,200	37,375	,000
Within Groups	723,200	57	12,688		
Total	1671,600	59			

Source: Author's research

The ANOVA result shows that there is a statistically significant difference between small (M = 48.80; SD = 2.876), medium (M = 44.70; SD = 3.629) and large companies (M = 39.10; SD = 4.077) (F = 37.375; $p<0.01$) in terms of the expected direct economic consequences of a fire.
Table 3 contains the descriptive statistical results for the expected indirect economic consequences caused by a fire by companies of different sizes. Table 4 shows the ANOVA result for the statistical significance of the difference in the arithmetic means for companies of different sizes.

Table 3. Expected indirect economic consequences of fire in companies of different sizes

Indirect economic consequences

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Small company	20	62,00	5,858	1,310	59,26	64,74	51	69
Medium company	20	55,90	4,789	1,071	53,66	58,14	44	66
Large company	20	46,40	4,740	1,060	44,18	48,62	38	55
Total	60	54,77	8,220	1,061	52,64	56,89	38	69

Source: Author's research

Table 4. Difference between companies of different sizes in terms of expected indirect economic consequences of a fire.

Indirect economic consequences

ANOVA	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2472,133	2	1236,067	46,518	,000
Within Groups	1514,600	57	26,572		
Total	3986,733	59			

Source: Author's research

The ANOVA result shows that there is a statistically significant difference between small (M = 62.00; SD = 5.858), medium (M = 55.90; SD = 4.789) and large companies (M = 46.40; SD = 4.740) (F = 46.518; p<0.01) in terms of the expected indirect economic consequences of a fire.
Table 5 shows the statistics on the prevalence of fire insurance among companies of different sizes.

Table 5. Prevalence of fire insurance among companies of different sizes

		Fire insurance		Total
		Yes	No	
Company size	Small company	6	14	20
	Medium company	12	8	20
	Large company	16	4	20
Total		34	26	60

Source: Author's research

Table 6 and Table 7 show the results of the linear regression for the impact of fire insurance on the level of expected economic consequences by companies. The results show that fire insurance has a statistically significant positive impact on the expected economic consequences of companies (F = 88.770; p<0.01). The value of the coefficient B = 20.149 (p<0.01) indicates that insurance is a significant predictor of the dependent variable – the economic consequences of fire. The model is statistically significant and explains a significant part of the variance in the results.

Table 6. Impact of fire insurance on expected economic consequences for companies

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5981,662	1	5981,662	88,770	,000[a]
	Residual	3908,271	58	67,384		
	Total	9889,933	59			

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5981,662	1	5981,662	88,770	,000[a]
	Residual	3908,271	58	67,384		
	Total	9889,933	59			

Source: Author's research

a. Predictors: (Constant), Fire insurance
b. Dependent Variable: Economic consequences of fire

Table 7. Impact of fire insurance on expected economic consequences for companies

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	70,086	3,243		21,609	,000
	Fire insurance	20,149	2,139	,778	9,422	,000

Source: Author's research

a. Dependent Variable: Economic consequences of fire

3. DISCUSSION

The results obtained confirm that the size of the company significantly affects the expected economic consequences of fires. Small companies show the highest expected direct and indirect losses, which indicates their greater vulnerability and lower financial resilience compared to medium-sized and large companies. These results are in line with the professional literature indicating that small companies are less likely to have reserve capacities and mechanisms for rapid recovery. In addition, the results showed that fire insurance also has a statistically significant positive impact on the expected economic consequences, which means that companies that have insurance expect to overcome the consequences of a fire more quickly. This emphasizes the role of insurance as a key instrument for managing fire risk and the economic stability of the company after a fire. It was shown that the smaller the company, the less prevalent fire insurance is, which suggests that despite the likely awareness of the importance of insurance, many small companies still perceive it as an additional expense, rather than an investment in stability. Overall, the results confirm that both company structural characteristics (size) and insurance are determinants that shape the economic consequences of a fire.

4. CONCLUSION

The research showed that company size and fire insurance have a significant impact on the expected economic consequences of fires. Smaller companies expect higher direct and indirect losses, which indicates their greater vulnerability and limited ability to recover. Although insurance has been confirmed as a key factor that significantly affects the expected economic consequences, many small companies still perceive it as a financial expense rather than as necessary protection. These findings highlight the need for increased support for insurance as an instrument for the economic sustainability of companies and fire risk management.

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