How Terrorism Shapes Tourism: A Panel Analysis of the EU (1997–2020)

Thesis by

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Contents

Declaration

I hereby declare that this dissertation is entirely my own work and that it has not been submitted as an exercise for a degree at this or any other university.

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Abstract

This thesis examines the economic consequences of terrorism for the European tourism sector. Using an original constructed monthly country–panel spanning from 1997 to 2020, which combines data from the Global Terrorism Database and Eurostat, I estimate both Ordinary Least Squares (OLS) and Fixed Effects (FE) regression models across five indicators of tourism activity: air passengers, total nights spent, domestic nights, foreign nights, and hotel occupancy.

The results show that higher terrorism intensity significantly reduces internationally exposed tourism indicators, particularly air travel, foreign nights, and hotel occupancy. Total nights spent also decline, while domestic nights remain largely unaffected, suggesting that local tourism demand is more resilient to terrorism shocks. These findings align with earlier evidence of substitution effects, but deepen them by showing that, within the EU, international flows are consistently more sensitive to terrorism than domestic travel.

Keywords: Terrorism; Tourism; European Union; Consumer Confidence; Fixed Effects; OLS; Tourism Sector; Consumer Behavior;

Part I

Introduction

Introduction

Tourism is one of the most vital sectors for many European economies, contributing to prosperity, employment, cultural exchange, and overall economic development. Tourism's vulnerability to external shocks has long been recognized, making it an important lens through which to study the broader effects of terrorism, as this thesis examines. This vulnerability becomes clearer when viewed against the socio-political changes Europe has faced in the last two decades. Events such as the Madrid train bombings (2004), the London bombings (2005), the Paris attacks (2015), and the Brussels attacks (2016) underscore not only the direct human toll of terrorism but also the ongoing psychological impact that follows [Frey et al., 2007], [Neumayer, 2004]. Chain reactions extend far beyond immediate damage; they extend into everyday choices, behaviors, and crucially, economic patterns.

More broadly, the global literature shows a clear pattern; that terrorism disrupts national economies. [Blomberg et al., 2004] provide cross-country evidence that terrorism significantly lowers macroeconomic indicators such as investment, consumption, and employment. Their analysis shows that over time, repeated terrorist incidents can lead governments to reallocate public spending, pulling resources away from long-term projects like infrastructure and education, and directing them toward security and emergency response. In particular, this pattern has surfaced not only in countries frequently affected by terrorism but also in those where such threats are comparatively less common.

Given the EU's complex economic system, terrorist activity in one nation often produces economic aftershocks across the region. Consumer sentiment, investment strategies, and non-essential spending patterns are vulnerable to external shocks, especially when emotional and mental impact is targeted because it unstabilizes everyday life [Arvanitidis et al., 2016], [Gaibulloev and Sandler, 2023]. This makes the EU an especially compelling, but still understudied, context for examining how fear and uncertainty translate into economic behavior.

The existing research on the economic impacts of terrorism has taken multiple directions. terrorism has measurable negative effects on tourism demand, consumer confidence, and macroeconomic performance. Part of the literature concentrates on the tourism sector, reflecting how attacks can deter international travel and damage destination reputations. Some studies emphasize sharp short-term declines in international arrivals and discretionary spending, while the persistence of effects depends on the severity and frequency of attacks. Other papers examine the affect on financial markets, investment flows, as well as, employment

levels and broader fiscal outcomes. What has become increasingly important in recent years is the understanding of how terrorism influences everyday economic life, particularly consumer sentiment, discretionary spending, and household behavior. Within the EU, these dynamics remain underexplored, despite the likely importance of cross-country spillovers and sectoral adjustments. These dynamics are crucial for the European Union and give thought for further analysis adding to the already existing literature.

The following analysis contributes to filling that gap by focusing on the relationship between terrorism and tourism in the EU. Using original large-scale panel data, it examines how terrorist incidents shape tourism; with particular attention to sectoral patterns such as international travel, hotel occupancy, and domestic alternatives. The findings suggest that terrorism leads to short-term declines in international arrivals and hotel performance, while domestic travel shows greater resilience. These results confirm what global studies have shown about terrorism's impact on tourism, but they also add new insights by showing how such effects unfold in the linked economies of the EU. They also highlight the importance of substitution and spillover effects, demonstrating that local shocks can influence consumer choices beyond national borders.

This thesis focuses specifically on the relationship between terrorism and tourism in the EU. It seeks to provide a deeper understanding of how terrorist incidents shape tourism dynamics by using large-scale panel data. The study will hopefully provide information on how terrorist incidents influence consumption in different tourism sectors. Ultimately, aims to highlight the wider economic consequences of terrorism for European tourism, offering insights with a particular emphasis on consumer patterns that may contribute in the EU's security and economic resilience.

Part II

Literature Review

1 Literature Review

1.1 Understanding Terrorism: Definitions, Typologies, and Characteristics

Terrorism can be better understood within the broader framework of political extremism. Political extremism addresses a spectrum of radical ideologies and behaviors that challenge democratic norms and often seek to impose alternative political or ideological orders [Borum, 2011]. It often carries strong cultural components, including identity-based narratives, historical disputes, and ideological symbolism. Within this larger context, terrorism emerges as one of the most violent and coercive extremist tactics used by radical groups to pursue their goals through fear, disruption, and acts of violence.

The term of terrorism, although widely recognized, we have to take into consideration that it can significantly differ in meaning due to its intensity, perception, justification based on context, region, religion, social or cultural elements. [Schmid, 2011] highlights the diverse definitions of terrorism across different fields. He discusses the challenges of establishing a universally accepted definition of terrorism, interesting noting that the term is often used in politically and emotionally driven ways. Most academic definitions align with the intentional use of violence by nonstate actors to advance political, ideological, or religious goals. Terrorist attacks indirectly aim to trigger fear that captures public attention while at the same time it is noteworthy to mention that the power of media increases significantly the emotional reactions supporting directly their agenda or objectives.

Terrorism has evolved in distinct types, each shaped by changing ideologies, political conditions, and technological advances. [Rapoport, 2004] identified four key types of modern terrorism: anarchist, anticolonial, leftist, and religious. Each type introduced different motivations and methods, reflecting the broader political context of the time. **The anarchist wave** emerged in the late nineteenth and early twentieth centuries, characterized by targeted assassinations and bombings intended to delegitimize state authority and inspire revolutionary movements. **The anticolonial wave** followed after World War II, when nationalist groups employed terrorism as a tool against colonial powers to achieve independence, often focusing on military or administrative targets rather than indiscriminate violence. **The leftist wave** emerged strongly in the 1960s and 1970s, led by groups such as the Red Brigades in Italy or the Red Army Faction in Germany, which framed their struggle as resistance against capitalist and imperialist systems; their

methods often included kidnappings, hijackings, and attacks on business or government figures. Finally, **the religious wave**, beginning in the late 1970s and continuing to the present, has been largely driven by groups invoking religious ideologies (most notably Islamist organizations such as al-Qaeda and ISIS) who seek to justify violence as part of a broader spiritual struggle.

Today, terrorism is less tied to structured and formal organizations and is more often carried out by loosely connected networks or self-radicalized individuals. Online platforms have become a central tool for recruitment and propaganda, lowering barriers for participation and making attacks more difficult to predict. At the same time, new forms of extremism, such as far-right violence driven by xenophobia and ultranationalism, indicate that future patterns of terrorism may rely on the same strategic logic of spreading fear and disruption.

Terrorism has a dynamic that has not been thoroughly studied within the European context. In different parts of the world, the aftermath of terrorist events varies in distinct ways regarding public perceptions. These include religious and cultural differences, media representation, trust in institutions, and other factors. Within the EU, such dynamics take on unique forms, signifying the diverse political, social, and historical landscapes. Europe's exposure to terrorism includes both local and international threats, frequently targeting areas where economic activity and public life are closely linked. Country-specific characteristics necessitate an analysis focused on the European Union, in order to account for both the similarities and differences between EU member states and the broader international context. For example, tourism-dependent economies such as Spain, Italy, and Greece are more vulnerable to sudden drops in arrivals after a terrorist attack, while Northern European countries often show faster recovery due to higher institutional trust. This approach enables meaningful comparisons and a deeper understanding of the extent to which European responses align with or diverge from global trends.

1.2 Terrorism and Financial Markets

Much of the literature examining the effects on financial markets comes from global or U.S.-based studies. For instance, [Enders and Sandler, 1996], using time-series data from the U.S. and international financial markets, were among the first to show that markets react swiftly and negatively to terrorist attacks, especially in vulnerable sectors such as aviation and insurance. [Chen and Siems, 2004] used global data to confirm the presence of significant but short-lived market volatility following major terrorist incidents. [Arin et al., 2008], also conducting a cross-country analysis, found that while markets in developed countries are generally more resilient, they still display initial shocks that reflect elevated risk perceptions.

Some studies examine how markets respond depending on the intent behind the attack or the ideological message it carries. According to [Drakos, 2010], who analyzed stock market reactions across a sample of 22 countries, attacks targeting political institutions or cultural sites tend to trigger more intense investor panic than attacks in less central areas. This shows that context matters in how markets react depending on the context of the attack and how emotions can shape financial decisions, particularly among investors or institutions. Together, these results show the increasingly complex relationship between terrorism and financial markets; shaped by emotion, speed, and context.

Within the EU context, region-specific studies provide more in-depth insight. [Kollias et al., 2011] examined the effects of the Madrid (2004) and London (2005) bombings on European stock markets, revealing that terrorist events in the EU lead to statistically significant declines in market performance, especially in sectors reliant on consumer mobility and confidence. These findings illustrate the particular sensitivity of EU financial systems to localized attacks, and they emphasize the value of region-specific data in understanding how European markets respond to terrorism.

1.3 Terrorism and Macroeconomic Consequences

Terrorism can be broadly categorized into domestic; conducted by actors within a country, and international; which involves foreign extremists or cross-border impacts. This distinction is essential in understanding how terrorism affects macroeconomic performance overtime. Domestic terrorism is often more connected to a country's internal political, social, or ideological divisions, leading to prolonged uncertainty, reduced investor confidence, and reallocations of public spending.

Much of the macroeconomic literature on terrorism draws from global or developing-country data. For example, [Gaibulloev and Sandler, 2008] and [Gaibulloev and Sandler, 2011], found that terrorism has a greater long-term effect on economic growth in low- and middle-income countries, largely due to their limited institutional resilience. Their research does not concentrate on specific countries but instead broader regional patterns and the effects of terrorism on economic growth across nations.

In contrast, [Abadie and Gardeazabal, 2003] focused on the Basque region of Spain, estimating that persistent terrorist activity resulted in a 10% decrease in GDP. [Blomberg et al., 2004], using data that includes multiple EU countries, showed that terrorism increases government security expenditure at the cost of long-term investments in areas such as infrastructure and education.
[Eckstein and Tsiddon, 2004], analyzing France and Spain, emphasized how fiscal resources are reallocated to counterterrorism and public security, further limiting economic growth.

These studies highlight the fact that while terrorism's macroeconomic effects are globally recognized, their regional effects in the EU context, tourism-dependent or politically sensitive regions, require targeted analysis. The evidence suggests that there is indeed an economic impact , see the case of Spain, which paves the way for further analysis, particularly regarding microeconomic effects within the EU.

1.4 Terrorism and the Microeconomy

1.4.1 Consumption Behavior Under Uncertainty

Studies on terrorism's effect on consumer behavior and psychology are often grounded in the US or global behavioral research. [Kahneman and Tversky, 1979] developed Prospect Theory which shows that individuals are loss-averse: they tend to weigh potential losses more heavily than equivalent gains when making decisions under risk. In the context of terrorism, attacks magnify perceptions of loss; loss of safety, income, mobility, or even life itself. As a result, consumers focus excessively on the risks of activities such as traveling, shopping in crowded places, or attending public events, even when the probability of another attack remains low. This tendency translates into more cautious consumption behavior, reduced spending in sectors (e.g., tourism, hospitality, leisure), and a general decline in consumer confidence. In this way, Prospect Theory provides a behavioral explanation, as fear exaggerates potential losses and suppresses consumer activity.

[Bracha and Weber, 2012] also working with US data, found that terrorism increases the feeling of uncertainty, which leads individuals to adopt more conservative financial plans. This response translates into reduced consumption and a tendency to save. In other words, terrorism reduces the willingness to consume while at the same time encouraging saving tactics.

In contrast, [Gaibulloev and Sandler, 2023] find that terrorism does not always cause lasting declines; its effects are often short-lived and fade as markets and consumers adapt. In other words, terrorism's impact is less severe and more uneven than commonly assumed. They emphasize that the magnitude of the effect depends on the frequency and severity of attacks, the resilience of institutions, and the emotional response of the public. In many cases, terrorism disrupts economic activity temporarily, but confidence rebounds quickly once uncertainty moderates. This perspective challenges the conventional view of terrorism as a predictable negative shock, highlighting instead the importance of behavioral and contextual factors.

European research in this area began to expand in the early 2000s.
[Drakos and Kutan, 2003] analyzed Southern European countries and found that terrorist attacks correlate with short-term drops in consumer confidence and tourism-related expenditures. [Brodeur, 2018], using data from developed countries including those in the EU, demonstrated that both failed and successful terrorist attacks lower consumer sentiment and employment rates. These findings show that within Europe, behavioral shifts following terrorism are measurable and economically significant.

1.4.2 Consumption Patterns

Compared to the volume of global and U.S.-focused work, EU-specific literature on post-terrorism consumption behavior remains relatively sparse and unevenly distributed across countries. Much of what we know about changing consumption patterns post-terrorism comes from global or U.S.-centric studies. [Melnick and Eldor, 2010], working with Israeli data, found that consumers reduce alternative spending and increase savings in the aftermath of attacks, especially when media reporting intensifies fear.

In the EU context, these consumptions shifts often reflect regional and cultural differences. Southern European countries—more frequently exposed to terrorism—may show faster behavioral adaptation. [Benítez-Aurioles, 2019], focusing on Spain, revealed how peer-to-peer tourism platforms were particularly vulnerable to perceived risk. [Aschauer, 2010] explored tourist risk perception in European destinations, noting that personal safety concerns directly influence travel and consumption choices. These findings show that terrorism can persistently affect European tourism, with potential spillover effects on household spending across the EU.

1.5 Sectoral Effects: Tourism and Travel

The tourism sector has long been recognized as one of the most vulnerable to terrorism. Compared to other sectors of the economy, tourism demand is strongly driven by perceptions of safety, vulnerable to shifts in consumer confidence, and easily redirected across alternative destinations. This makes tourism a natural testing ground for the study of terrorism's economic consequences.

Before reviewing the empirical literature, it is important to consider why tourism is theoretically relevant in the study of terrorism. Scholars have argued that tourism is not only incidentally affected but can also be an explicit target of terrorist violence. The sector is highly visible, internationally interconnected, and symbolically important: attacks on tourists or tourism infrastructure attract disproportionate media attention, generate fear among potential travelers, and undermine the image of a country as a safe destination [Enders and Sandler, 2011].

Terrorist groups may also target tourism precisely because it represents openness, cultural exchange, and globalization. Destinations such as hotels, resorts, or airports concentrate large numbers of foreign nationals, making them attractive for groups seeking to maximize publicity or exert pressure on governments [Richter and Waugh Jr, 1986]. In this sense, tourism can be understood as a soft target industry: demand is highly elastic and consumer trust is easily eroded.

Unlike other industries, a single attack at a major tourist site can quickly damage a country's image, reduce foreign earnings, and create lasting reputational harm for a destination.

Early work highlighted the disruptive effect of terrorist incidents on European tourism flows. [Enders and Sandler, 1991] showed that terrorism in Spain significantly reduced international arrivals, while [Enders et al., 1992] confirmed that such shocks generated persistent declines in tourism revenues. These studies also established the idea of tourist substitution: visitors tend to avoid affected destinations and redirect their travel towards alternative, perceived-safe locations. [Drakos and Kutan, 2003], focusing on Greece, Israel, and Turkey, found that terrorist attacks in one country reduced tourism not only there but also in neighboring states, since travelers often avoid entire regions they perceive as risky.

Later studies broadened the scope. [Fourie et al., 2020] used monthly global data to estimate the impact of terrorism on arrivals and hotel stays, showing that even relatively small-scale events can meaningfully disrupt international tourism flows. [Neumayer and Plümper, 2016] showed that terrorist attacks which receive a lot of international media coverage can heighten fear among travelers and, as a result, reduce tourism demand in the affected destinations.

Therefore, terrorism affects tourism in three main ways. First, **risk perception:** travelers avoid destinations associated with insecurity, even if actual probabilities of victimization are low. Second, **seasonality:** since tourism demand is concentrated in peak summer months, terrorist events during these periods have especially large effects. Third, **elastic consumption:** unlike food or housing, travel can be easily postponed or replaced with alternatives, which amplifies the elasticity of demand. In addition, terrorist incidents in prominent cities such as Paris, London, or Barcelona tend to spill over to national tourism demand, compounding the economic effect.

While these studies establish important facts about the vulnerability of tourism to terrorism, several gaps remain. Much of the earlier literature focuses on individual countries or specific high-profile cases (e.g., Spain, Turkey, Israel), limiting the validity of results within Europe. More recent contributions employ multi-country panel data, but they often rely on annual (or quarterly) measures and primarily examine international arrivals or revenues.

This thesis builds on that literature by constructing an original monthly panel dataset for all EU member states over the period 1997–2020, combining Eurostat tourism indicators with terrorism data from the Global Terrorism Database (GTD). This allows to capture short-term dynamics of tourism demand. Methodologically, this study differs from earlier approaches. [Llorca-Vivero, 2008], for example, relies on annual panel data for a limited set of countries, which makes it difficult to capture the short-run dynamics of terrorism on tourism demand. By contrast, this thesis employs a new monthly EU-wide panel, over more than two decades, and estimates both Ordinary Least Squares (OLS) and Fixed Effects (FE) regressions. This allows for a more closer examination of how terrorism affects both internationally exposed indicators (air passengers, foreign nights, hotel occupancy), as well as, domestic tourism.

The central aim is to test whether higher terrorism intensity reduces international tourist flows and hotel occupancy within countries, while domestic tourism remains more resilient. In this way, the thesis evaluates whether the European tourism sector exhibits the same substitution patterns observed in earlier single-country studies, or whether a broader EU-wide perspective reveals different dynamics.

The main goal is to examine whether higher terrorism intensity reduces international travel and hotel stays within countries, while domestic tourism remains more resilient. Earlier evidence, such as [Pizam and Fleischer, 2002] for Israel, suggests that domestic tourism is less affected by terrorism, as residents often shift toward local trips when international demand declines. The results of this thesis confirm that similar substitution patterns also apply within Europe, showing that domestic tourism is comparatively more resilient to terrorism shocks; an angle that has so far been relatively underexplored inside the EU.

Part III

Methodology

2 Methodology

2.1 Methodology

This thesis employs an econometric framework to assess the impact of terrorism on tourism outcomes across EU member states over the period 1997–2020. The empirical analysis relies on both Ordinary Least Squares (OLS) and Fixed Effects (FE) regression models. The dataset is structured as a cross-country monthly panel, which enables the study to capture both short-term dynamics and persistent cross-country differences. The panel is an originally constructed dataset, combining terrorism incidents from the Global Terrorism Database (GTD) with Eurostat tourism indicators and macroeconomic variables.

$$Y_{it} = \alpha + \beta\,\text{Terrorism}_{it} + \gamma\,X_{it} + \mu_i + \tau_t + \varepsilon_{it} \tag{2.1}$$

where:

- Y_{it}: outcome variable (tourism activity: air passengers, nights spent, hotel occupancy, etc.)
- Terrorism_{it}: terrorism intensity proxy (incidents per 100k, rolling 12m attacks) — *main variable of interest*
- X_{it}: control variables (consumer confidence index, HICP, unemployment)
- μ_i: country fixed effects (captures time-invariant factors such as geography, culture, etc.)
- τ_t: time fixed effects (captures shocks common to all countries, e.g. global crises, pandemics)
- ε_{it}: error term

The coefficient of interest is β, which captures how changes in terrorism intensity affect tourism activity, on macroeconomic conditions and fixed effects.

2.2 Data Description

The empirical dataset is an originally constructed monthly country–month panel covering EU member states from 1997 to 2020. Terrorism events are aggregated at the monthly level and merged with Eurostat-based macroeconomic controls and tourism outcomes, providing a unified framework.

2.2.1 Data Sources

- **Terrorism:** Global Terrorism Database (GTD), filtered to EU countries (AT, BE, BG, HR, CY, CZ, DK, EE, FI, FR, DE, GR, HU, IE, IT, LV, LT, LU, MT, NL, PL, PT, RO, SK, SI, ES, SE) and years 1997–2020.
- **Macroeconomic controls:** Eurostat monthly series: Consumer Confidence Index (CCI), Harmonised Index of Consumer Prices (HICP), and unemployment rate.
- **Tourism outcomes:** Eurostat monthly series: air passengers carried (total), nights spent (total/domestic/foreign), and net occupancy rate of bed-places in hotels and similar accommodation.
- **Population:** Eurostat annual population by country, used to derive per-capita measures.

2.2.2 Variables

Terrorism measures.

- *incidents*: monthly count of GTD events per country.
- *incidents_pc* = *incidents*/population; for regressions rescaling to *incidents_pc100k* = 100,000× *incidents_pc*.
- *attacks_last_12m*: rolling count of incidents in the previous 12 months (strictly before the current month), computed within country.

Tourism outcomes (per month).

- *air_passengers_pc*: total air passengers divided by annual population (per capita).
- *nights_total_pc*, *nights_domestic_pc*, *nights_foreign_pc*: nights spent (total, domestic, foreign) divided by annual population (per capita).
- *net_occ_bedplaces_m*: net occupancy rate of bed-places (%).

Macroeconomic controls.

- *cci*: Consumer Confidence Index (balance statistic).
- *hicp*: Harmonised Index of Consumer Prices (Eurostat series, monthly).
- *unemployment*: unemployment rate (% of labour force).

Part IV

Analysis & Findings

3 Analysis and Findings

3.1 Analysis and Findings

Table 3.1 reports the results from *Ordinary Least Squares (OLS)* regressions for five tourism outcomes: **Air Passengers, Nights Total, Domestic Nights, Foreign Nights,** and **Occupancy Rate**. Each model relates tourism activity to terrorism intensity while controlling for macroeconomic indicators (CCI, HICP, unemployment).

Table 3.1: Simple OLS Models

	Nights Total	**Air Passengers**	**Occupancy Rate**	**Foreign Nights**	**Domestic Nights**
Terror Incidents (per 100k)	2.63741***	1.72677***	25.05468 .	2.75700***	-0.04757
	(0.29274)	(0.14798)	(13.35844)	(0.26380)	(0.07717)
Rolling 12m Attacks	0.00065	0.00123	0.52654***	-0.00410 .	0.00488***
	(0.00274)	(0.00143)	(0.12564)	(0.00246)	(0.00083)
Consumer Confidence Index	0.00149	0.00393***	0.43768***	0.00006	0.00278***
	(0.00081)	(0.00044)	(0.03644)	(0.00072)	(0.00027)
HICP	0.02381***	0.00274	2.55364***	0.02427***	0.00760**
	(0.00654)	(0.00350)	(0.29999)	(0.00590)	(0.00253)
Unemployment Rate	0.01401***	0.01163***	0.98039***	0.01361***	0.00422***
	(0.00279)	(0.00156)	(0.12571)	(0.00251)	(0.00088)
Constant	0.14418***	0.14039***	31.46203***	0.00164	0.11847***
	(0.03138)	(0.01682)	(1.42127)	(0.02831)	(0.00948)

Standard errors in parentheses. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

In the *simple OLS* results (Table 3.1), the terrorism intensity proxy (incidents per 100k) loads positively on most outcomes: *Air Passengers* ($\approx 1.73^{***}$), *Nights Total* ($\approx 2.64^{***}$), *Foreign Nights* ($\approx 2.76^{***}$), and is borderline positive for *Occupancy Rate* (≈ 25.05). The coefficient for *Domestic Nights* is small and not significant. This pattern is consistent across countries: larger, internationally attractive destinations host more visitors and also experience more attacks.

While the OLS models provide a useful baseline, they do not account for unobserved heterogeneity across countries and over time. To address this, Table (Table 3.2) presents results from Fixed Effects (FE) regressions. These models control for country-specific characteristics that are constant over time; such as population demographics, climate, geography, etc.

BeBefore discussing the fixed-effects results, it is important to note that each outcome is estimated under two specifications: one with country fixed effects only and one with both country and year–month fixed effects. The inclusion of time fixed effects controls for global shocks and common seasonal patterns that affect all countries simultaneously, such as economic crises or the pandemic. By contrast, country fixed effects capture structural differences that are constant within countries, such as geography or the average size of a country's tourism sector. When most of the variation comes from changes within each country over time, adding time effects often makes the coefficients smaller or less significant, but the overall direction of the results usually stays the same.

Table 3.2: Fixed-Effects Models (Country vs. Country + Year–Month)

	Nights Total		**Air Passengers**		**Occupancy Rate**		**Foreign Nights**		**Domestic Nights**	
	Country FE	+Time FE	Country FE	+Time FE	Country FE	+Time FE	Country FE	+Time FE	Country FE	+Time FE
Terror Incidents (per 100k)	-1.550***	-1.059**	-0.841***	-0.562***	-62.917***	-40.273***	-1.577***	-1.223***	0.098	0.167*
	(0.351)	(0.317)	(0.146)	(0.113)	(13.856)	(8.681)	(0.319)	(0.297)	(0.175)	(0.066)
Rolling 12m Attacks	0.00495	0.00095	0.00202	-0.00105	0.30361	-0.01401	0.00167	-0.00158	0.00190	0.00103
	(0.00395)	(0.00308)	(0.00214)	(0.00085)	(0.20754)	(0.17548)	(0.00325)	(0.00310)	(0.00157)	(0.00119)
Consumer Confidence Index	0.00146	0.00031	0.00163*	0.00062*	0.32179***	0.16961**	0.00125	0.00012	0.00178*	0.00045
	(0.00114)	(0.00083)	(0.00075)	(0.00024)	(0.08269)	(0.05974)	(0.00085)	(0.00081)	(0.00069)	(0.00033)
HICP	0.01696	-0.00277	0.00612	-0.00121	1.75236***	0.37840	0.01423	-0.00285	0.00972**	0.00635*
	(0.01105)	(0.00863)	(0.00426)	(0.00456)	(0.41840)	(0.37052)	(0.00970)	(0.00850)	(0.00260)	(0.00300)
Unemployment Rate	0.00676 .	0.00088	0.00598**	-0.00018	0.37087	-0.53061*	0.00666*	0.00225	0.00634**	0.00098
	(0.00365)	(0.00216)	(0.00181)	(0.00132)	(0.22225)	(0.20721)	(0.00299)	(0.00204)	(0.00197)	(0.00144)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year–Month FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Standard errors clustered at the country level in parentheses. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Regarding the *Fixed-Effects* results (Table 3.2), terrorism intensity is consistently negative and statistically significant for the internationally indicators. *Air Passengers, Foreign Nights,* and the *Occupancy Rate* all decline as the rate of terrorist incidents (per 100,000 population) increases, while the aggregate Nights Total measure also shows a significant reduction.

By contrast, *Domestic Nights* do not show a clear negative effect. In the country FE only regression, the coefficient on terrorism is small and statistically insignificant, while in the country + year–month FE it turns slightly positive and significant. This suggests that domestic tourism is not strongly affected and may even increase a little when international travel declines.

The magnitudes are economically meaningful but not extreme: a one-unit increase in terrorism intensity corresponds to declines in hotel occupancy of around one to one-and-a-half percentage points, with comparable negative impacts observed for international arrivals and nights spent.

At the same time, stronger consumer confidence (CCI) is positively associated with tourism activity across several measures, reinforcing the statement that when people feel more positive about the economy, they are also more likely to travel. Overall, the results suggest that terrorism primarily depresses international tourism demand and accommodation use, while domestic travel remains comparatively resilient.

Part V

Conclusion

4 Conclusion

4.1 Conclusion

This thesis examined whether, and to what extent, terrorism affects tourism activity in the European Union. Using a monthly country–panel assembled from the Global Terrorism Database and Eurostat, both pooled OLS and fixed–effects (FE) models were estimated across five outcomes: Air Passengers, Nights Total, Domestic Nights, Foreign Nights, and Hotel Occupancy. Within countries, increases in terrorism intensity are associated with *meaningful declines* in internationally exposed margins of tourism: air travel, foreign nights, and hotel occupancy. The total nights measure also falls. By contrast, domestic nights do not show a robust domestic decline, suggesting partial substitution toward local trips when international demand softens. Macroeconomic controls behave sensibly: stronger consumer sentiment (CCI) correlates with higher activity, unemployment weighs on occupancy, and inflation (HICP) has mixed effects but tends to be more relevant for domestic nights.

The fixed–effects results, whether using country FE only or combined country and time FE, show that terrorism shocks reduce international demand and hotel use, while domestic travel is not significantly affected. In short, foreign tourism is highly sensitive to security concerns, whereas local travel is more resilient.

These findings align with earlier studies such as [Enders and Sandler, 1991], who showed that terrorist violence in Spain drove tourists to substitute toward alternative Mediterranean destinations, and [Drakos and Kutan, 2003], who found that terrorism in Greece, Israel, or Turkey discouraged not only travel to the directly affected country but sometimes to the whole region. By using an original monthly EU-wide panel, this thesis extends these insights to a broader setting, showing that while international demand declines, domestic tourism remains largely unaffected.

A further contribution of this thesis lies in its distinction between domestic and foreign tourism. Prior research indicates that there are no EU studies that distinguish between domestic and foreign nights in response to attacks. By incorporating Eurostat's data, this thesis provides new evidence that domestic tourism in the EU is comparatively resilient, offering a novel perspective that extends beyond the traditional emphasis on international flows.

While prior studies have shown that terrorism depresses international arrivals in Europe, and some evidence outside the EU suggests domestic travel can be more

resilient, existing research has not jointly examined domestic and foreign nights within a unified EU framework. This thesis addresses that gap by comparing both dimensions directly.

Future work can broaden the scope in several ways. One direction is to study *spillovers and networks*, tracking changes toward neighboring countries or competing destinations through spatial fixed effects. Another is to examine the *spillover effects on household consumption*, with a particular focus on retail shopping. While the impact of terrorism on tourism is relatively well studied, much less is known about how such shocks influence day-to-day spending patterns in retail sectors. Exploring whether terrorism reduces alternative retail purchases, shifts demand toward essential goods, or accelerates substitution toward online shopping would offer valuable insights into the broader economic consequences of terrorism.

Within countries, higher terrorism intensity reduces international tourism and hotel use, while domestic travel remains relatively stable. Sentiment matters: when consumers feel better, activity is stronger even after accounting for fixed effects. For policy, this highlights the value of clear safety communication and temporary support for sectors most reliant on foreign visitors. For research, it highlights the value of using country-level variation and frequent data to see how risk and fear shape mobility.

Part VI

Appendices

A Descriptive Statistics

Appendix A: Summary Statistics

Table A.1: Descriptive Statistics

Variable	N	Mean	SD	Min	Median	Max
Terror Incidents (per 100k)	1133	0.021	0.036	0.001	0.009	0.443
Rolling 12m Attacks	1133	5.95	3.90	0	6	12
Air Passengers (per capita)	924	0.247	0.177	0	0.200	1.510
Nights Spent (Total, per capita)	1049	0.365	0.353	0.001	0.262	3.770
Nights Spent (Domestic, per capita)	586	0.156	0.084	0	0.144	0.503
Nights Spent (Foreign, per capita)	1057	0.216	0.332	0	0.102	3.540
Occupancy Rate (bed-places, %)	999	42.8	15.9	0	40.7	96.3
Consumer Confidence Index	1104	-14.6	17.7	-81.3	-9.85	15.4
HICP	1127	2.17	10.5	-2.9	1.5	344
Unemployment Rate	1104	10.5	5.23	2.7	9.2	28.3

Notes: Statistics computed per variable using available observations. Per-capita variables use annual population and are monthly in frequency.

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