The Financial Dynamics of Major Sporting Events: A Case Study Approach

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Abstract

Mega sporting events like the Olympics and the FIFA World Cup are among the most viewed spectacles in the global economy. They are frequently justified in terms of economic rewards, with host countries expecting increases in Gross Domestic Product (GDP), Foreign Direct Investment (FDI), and international tourism. However, the extent to which these expectations are met remains debatable. This thesis examines the financial dynamics of mega sporting events using a multi-method empirical approach that includes a stock market event study, a Difference-in-Differences (DiD) framework and a panel regression analysis.

The event research evaluates stock market reactions in six host nations throughout both the announcement and event timeframes. The findings demonstrate short-lived abnormal returns, which are the strongest at the time of announcement (particularly in Brazil 2014), but weak or negative during the events themselves. The data suggest that markets react more to new information about hosting than to Games or tournaments that have already begun.

The DiD research examines GDP, FDI, and tourist arrivals for six hosts: Sydney (2000), Beijing (2008), South Africa (2010), London (2012), Brazil (2014), and Russia (2018). The outcomes are quite uneven with Beijing seeing GDP and FDI gains, whereas South Africa and Brazil seeing reductions in the same aspects. Tourism outcomes are uneven, with increases in some cases and crowding-out impacts in others.

Finally, the panel regression study of both the host and non-host nations reveals no systematic evidence of GDP growth impacts during host years or following periods. The cumulative hosting variable suggests that frequent hosting might degrade long-term performance.

Overall, the data show that, while mega sporting events may provide symbolic significance and occasional short-term advantages, they are not reliable drivers of national economic growth. This thesis adds to the literature by conducting a comprehensive, multi-model assessment of mega event consequences and making policy suggestions for a more cautious and strategically integrated approach to hosting.

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List of Acronyms

- AR – Abnormal Return
- CAR – Cumulative Abnormal Return
- DiD – Difference-in-Differences
- FDI – Foreign Direct Investment
- FIFA - Fédération Internationale de Football Association
- GFCF – Gross Fixed Capital Formation
- GDP – Gross Domestic Product
- IOC – International Olympic Committee
- IT – International Tourism
- R^2 - Coefficient of Determination (Goodness-of-Fit)
- UNTWO – United Nations World Tourism Organization
- WC – World Cup
- WDI – World Development Indicators (World Bank)

Chapter 1 - Introduction

1.1 – Background and Context

Mega sporting events like the Olympic Games and the Fédération Internationale de Football Association (FIFA) World Cup have become some of the most significant spectacles in today's global economy. They reach billions of people globally, drawing millions of visitors to host nations and demanding multibillion-dollar expenditures in infrastructure, operations and security. In addition to the sports competitions, these events are usually seen as opportunities for host countries to enhance their growth, attract international investment while also raising their profile around the world. Countries are putting a lot of money and political power into getting these benefits, which has made the race to host the Games and the World Cup even more competitive.

The most common rationale used by policymakers and bid committees is economic. Event planners use expected rises in Gross Domestic Product (GDP), employment, inbound Foreign Direct Investment (FDI), and international tourism to try to explain why so much public money is needed. The International Olympic Committee (IOC) and the FIFA have both recently backed a bigger pool of candidate hosts, including rising nations, which may lead to economic gains.

However, the track record of such instances has been questioned. The risks are highlighted by high-profile examples such as the 2004 Athens Olympic, which left the whole nation with billions in debt, and Brazil's 2014 World Cup, when freshly built stadiums fell into neglect. On the other hand, the 1992 Barcelona Olympics are frequently seen as a success, having fuelled long-term urban change and tourism growth. This disparity has led to academic and governmental discussions regarding whether mega sporting events actually offer economic benefits or if they are mostly about political ambition and national glory (Baade and Matheson, 2016; Baade, 2004; Zimbalist, 2015).

1.2 – Research Problem

The disparity between ex-ante forecast and ex-post data poses a significant issue in judging mega-events. Pre-event studies, which are frequently commissioned by organisers, are based on input-output or computable general equilibrium models with significant multipliers, low displacement of other spending, and substantial post-event legacies (Matheson, 2006). These estimates consistently predict significant growth, often up to several percentage points of national GDP.

However, independent ex-post studies provide a different perspective. A substantial body of research shows that many of the promised advantages do not materialise after substitution effects, opportunity cost and crowding-out are taken into consideration. Baade and Matheson (2016) demonstrate that macroeconomic consequences are often minor or even negative, while Zimbalist (2015) illustrates how cost overruns and white-elephant infrastructure frequently overshadow any

short-term advantages. Similarly, Fourie and Santana-Gallego (2011) and Vierhaus (2019) discovered that while tourism occasionally increases the impacts are brief and unpredictable.

Despite the rising literature, significant gaps remain. First, most studies concentrate on either financial market reactions or macroeconomic performance, but rarely both. Second, few use numerous empirical methodologies simultaneously to capture the many financial processes at work. Finally, data from recent hosts such as Beijing (2008), Russia (2018), and Qatar (2022) remains incomplete. To close these gaps, a systematic, multi-model study is required, taking into account both short-term financial signals and long-term macroeconomic results.

1.3 – Research Aim and Objectives

The purpose of this thesis is to analyse the financial dynamics of mega sporting events using a multi-method approach.

The specific objectives are three:

1. Using an event analysis of cumulative abnormal returns to determine how stock markets react to the announcement and start of these events.
2. Using a Difference-in-Differences model to assess the causal effect of hosting the Olympic Games and the FIFA World Cup on GDP, FDI and foreign visitor arrivals.
3. Using a panel regression with fixed effects across host and non-host nations to determine if hosting has long-term macroeconomic consequences.

1.4 – Research Questions

In accordance with these aims, the study addresses three research questions:

1. How do stock markets respond to the announcement of hosting rights and the start of mega starting events?
2. Does hosting the Olympics or the World Cup have a causal influence on GDP, FDI, or international tourism flows?
3. Do host countries get meaningful long-term growth benefits, and does recurrent hosting amplify or lessen these effects?

1.5 – Contribution to the Study

This thesis adds to the academic and policy discussion in a variety of ways. First, it combines three econometric methodologies: event research, Difference-in-Differences analysis and a panel regression. This results into a more complete and wider perspective of mega event impact than studies that depend on a single focused method. It also enables for a comparison of short-term financial market reactions, medium-term underlying impact, and long-term growth trends.

Second, the theory updates evidence for a variety of previous hosts including Beijing 2008, South Africa 2010, London 2012, Brazil 2014, Russia 2018 and Tokyo 2021. These cover a wide range of contexts, from advanced to emerging economies, and provide insights into how consequences differ depending on geography and stage of development.

Third, the study connects what happens in the financial markets with what happens in the economy as a whole. When you look at both, you can see that stock markets sometimes have short periods of optimism, but they do not lead to steady growth in GDP, FDI, or tourism. This two-pronged approach gives a better understanding of how major events are seen in financial markets and how they do in real economies.

Finally, the study reinforces the evidence that mega-events are not effective drivers of development. The use of strong econometric methods and counterfactual analysis strengthens the conclusion that benefits are limited and frequently exceeded by costs.

1.6 – Structure of the Thesis

The rest of the thesis is structured as follows:

- Chapter 2 – Literature Review: examines scholarly research on the economic and financial consequences of mega sporting events, comparing ex-ante forecasts to ex-post data.
- Chapter 3 – Methodology: describes the three empirical methodologies employed, including data sources, model definitions, and explanation for variable selection.
- Chapter 4 – Analysis and Results: presents the results of the event study, Difference-in-Differences analysis, and panel regression.
- Chapter 5 – Discussion, Conclusion, and Recommendations: interprets the findings in light of the literature, explains the key findings, and makes suggestions for policymakers and future study.

1.7 – Conclusion

Mega sporting events combine economies, politics, and global spectacle. While they elicit passion and get global attention, their financial mechanics are frequently misunderstood. The introduction provided background information, indicated a research gap, and explained the thesis's goals and objectives. The study employs three distinct methodologies to deliver a balanced and empirically grounded assessment of whether hosting the Olympic Games and the FIFA World Cup yields real economic benefits or if the advantages are largely symbolic rather than significant.

Chapter 2 – Literature Review

2.1 – Introduction to Mega Sporting Events and Financial Dynamics

Mega sporting events like the Olympics and the FIFA World Cup are among the most prominent and expensive international projects of the modern period. They draw billions of viewers from around the world, activate millions of tourists, and also induce investments that frequently surpass the budgets of large-scale public works projects. Hosting such events can be both a gamble and an opportunity for governments since even though they are painted as accelerators for economic growth, tourism expansion, and worldwide recognition due to its enthusiasm, critics highlight the hazards of inflated expenses, underutilised infrastructure, and financial crowding out (Baade and Matheson, 2016; Matheson, 2006).

The sheer size of mega-events contributes to their attractiveness. The Summer Olympics, for example, include almost 10,000 competitors from more than 200 nations, with international TV audiences exceeding three billion. On a similar note, the FIFA World Cup sells millions of tickets and receives month-long international media attention. This unparalleled exposure, it fosters expectations that hosting would offer not only short-term advantages in the form of visitor spending and job creation, but also long-term benefits in infrastructure, urban development, and a better image of the nation worldwide (Baade and Matheson, 2016; Nawalkha, 2024).

Despite these assumptions, the academic literature suggests a more cautious approach. Independent ex-post studies regularly reveal that economic advantages are in most cases exaggerated in ex-ante promotional papers commissioned by promoters or the government (Matheson, 2012). Even though cities and nations frequently estimate billions of dollars in new income and jobs, the actual results are typically small, concentrated in specialised sectors (mostly construction or hospitality), and frequently offset by displacement and substitution impacts. For example, spending by visitors from overseas during these events may merely replace spending that would otherwise have been conducted by domestic tourists, delivering no net gain to the national economy (Matheson, 2006).

The gap between the expected and actual financial effect of mega-events is a common issue in the literature. Ex-ante models, which depend largely on multipliers and optimistic visitor forecasts, generally anticipate significant increases in GDP and employment. Ex-post econometric studies, whether at the local, regional or even at national level, typically show small or statistically insignificant effects on macroeconomic aggregates such as GDP growth, trade or long-term employment. This disparity reflects both the limitations of methodology and the complexities of mega-events, they are brief shocks, but their financial dynamics relate to larger cycles of investment, consumption and government financing (Sterken, 2006).

The instance of mega sporting events exemplifies a basic contradiction. They are targeted by governments as high-profile chances for economic and political benefit, but independent research consistently reveals modest or unequal results. This contradiction drives the questions discussed in the following section; whether hosting adds significantly to GDP growth, how much it increases foreign tourism, and whether financial markets price-in these expectations around the announcement and hosting periods.

2.2 - Theoretical Foundations of Economic Impact

The economics of mega sporting events has long been marked by a disparity between expectations and actual results. The various methodologies for estimating impact are at the heart of this discrepancy. Ex-ante studies, which are often conducted during the bidding or planning stages, use input-output or computable general equilibrium (CGE) models to anticipate visitor spending, job creation and multiplier effect. On the other hand, ex-post assessments, use actual data to examine the impacts, with the likes of macroeconomic statistics, tourism arrivals or stock market performance. These two techniques typically provide very different results (Matheson, 2006; Baade and Matheson, 2016).

Ex-ante projections often predict significant positive outcomes. When taking the 2002 World Cup that happened in Japan as an example, this was expected to create almost USD 25 billion in benefits for Japan and USD 9 billion for South Korea, both of which represented major portions of yearly GDP (Matheson, 2006). Such optimistic estimates were based on multiplier models, which imply that additional tourist spending circulates throughout the host economy, resulting in indirect and induced impacts that exceed the initial expenditure. A hotel guest's spending on hotel rooms, for example, generates money for employees, who subsequently spend the money on local businesses, thereby magnifying the initial impact (Preuss, 2009).

However, these models are prone to exaggeration since they frequently ignore multiple opposing influences. First, crowding out happens when foreign visitors drawn to the event outnumber normal tourists who shun the host city owning to traffic, expensive prices or security concerns. Despite strong ticket sales, overseas arrivals at the 2012 London Olympics declined (Vierhaus, 2019). Secondly, there is the substitution effect. This occurs when locals direct their spending towards event related purchases, such as tickets and merchandise, at the expense of other local products and services. From a macroeconomic standpoint, this is a shift and not a net rise in expenditure. Third, leakages weaken local multipliers. The vast majority of the cash that is produced by mega-events accrues to international players such as global sponsors, foreign owned hotel chains and television firms, with very little retention in the host economy (Matheson, 2012; Matheson, 2006).

Ex-post studies often show more moderate effects. According to Baade and Matheson (2016), while headline expenditure estimates for the Olympics might look good, when displacement and opportunity costs are taken into account, the overall contribution is small or even negative. Similarly, independent evaluations of World Cups have revealed that forecasts of millions of

additional tourists typically translate into only modest increases in tourist numbers, as shown in Germany (2006) and South Africa (2010) (Vierhaus, 2019; Nawalkha, 2024).

Another theoretical problem is the handling of infrastructure investment. Supporters of mega-events say that investing in stadiums, transportation, and housing may boost growth by increasing productivity and urban development. However, this is heavily dependent on how well the infrastructure is incorporated into long-term urban demands. White elephants, or venues that are rarely used after the event, represent sunk expenses that strain state resources. This can be seen in different cases such as the Olympics in Athens in 2004 as well as the Olympics in Rio de Janeiro in 2016 (Matheson, 2012). Even when infrastructure is valuable, it is difficult to distinguish between the mega event's impact and larger development strategies that may have justified such expenditures on their own (Baade and Matheson, 2016).

Finally, the opportunity cost of public funding needs to be acknowledged. In many cases, hosting, necessitates significant government investment, either directly via subsidies to organising committees, or indirectly through security, transportation and urban development. There is the counter argument that such money may have been spent on more important purposes such as education, healthcare, or other infrastructure with possibly better social benefits. As Matheson (2006) points out, boosters hardly integrate these trade-offs into ex-ante models, exaggerating the apparent advantages.

These theoretical issues all point to why independent researchers are wary of promises that are too good to be true. Mega-events can increase activity in the near term and have intangible benefits like local pride and global recognition, but their actual economic effect is often far lower than predicted. This explains the growing dependence on econometric methodologies like difference-in-differences, panel regression, and event study, the same methods used in this thesis, to isolate casual effects and account for the biases inherent in ex-ante forecasts.

2.3 – Macroeconomic Outcomes: GDP Growth and Investment

One of the most common arguments in support of holding mega sporting events is that they stimulate economic growth. Governments frequently portray the Olympics and World Cup as catalysts for national growth, predicting an increase in GDP and international investment. However, academic research paints a significantly more complicated picture.

Early cross-country studies were largely encouraging. Streken (2006) examined the postwar history of Olympic Games and World Cups and have shown that the Summer Olympics were connected with stronger per capita GDP growth than the World Cup. His findings revealed that the Olympics' larger range of sports and worldwide attention made them better suited to economic spillovers. However, additional research has thrown doubt on the reliability of these conclusions.

An increasing amount of literature highlights the anticipation effect. Brückner and Pappa (2015) demonstrate that the true macroeconomic boost frequently occurs years before the Games. Using panel data from 188 nations, they discovered that investment, consumption, and output all increase considerably between winning a bid and hosting the Olympics. The reasoning is simple: once a nation has been chosen, large-scale construction projects, government spending and corporate investment increase in preparation. The economy suffers from what is called a pre-event boom. However, their findings show that the impact disappears rapidly after the event, without any indication of any long-term development.

This anticipation dynamic explains why difference-in-differences and other causal approaches frequently fail to uncover significant post-event effects. When comparing the host nation's counterfactual trajectory to that of similar non-hosts, GDP growth rates tend to converge once the short-term building boom has ended. In other words, the event alters the timing of investment and production rather than causing a permanent increase. A clear example of such a case Brazil in 2014, where preparations for the World Cup boosted investment, but growth plummeted almost immediately after the event due to underlying economic issues (Nawalkha, 2024).

Case studies over the years continue to support this viewpoint. The 2008 Beijing Olympics cost an estimated $40-60 billion, most of which went to improve infrastructure (Brückner and Pappa, 2015). While headline GDP growth remained robust, independent research determined that these outcomes were consistent with China's overall trajectory at the time. Similarly, in South Africa (2010), despite great predictions that the World Cup would raise GDP and worldwide confidence, ex-post evaluations revealed only moderate momentary improvements in output and no obvious long-term economic benefit (Nawalkha, 2024).

FDI is occasionally cited as an alternate mechanism via which mega-events might influence growth. The notion is that hosting promotes openness and modernity, attracting international investment. While anecdotal evidence supports this for certain hosts, such as Beijing's attempts to draw in global investors during the 2008 Olympics, systematic proof is lacking. Studies on previous World Cups and Olympics show that FDI inflows are variable and significantly impacted by larger macroeconomic conditions, making it impossible to attribute these changes solely to hosting (Matheson, 2012).

Importantly, the difference between the Olympics and the World Cup comes up often. According to Vierhaus (2019) and other tourism focused research, the Olympics, particularly the Summer Games, have a greater lasting effect, which is due in part to their concentration in a single city and their framing as national showcase events. In contrast, the World Cup is distributed over numerous cities and sometimes even nations, diminishing the visibility and scope of investment in any single area. Therefore, the World Cup's GDP effect is often short-lived and minor.

Critics further point out that beneficial outcomes, when they occur may represent endogeneity rather than causation. Countries that thrive in hosting are frequently those who are already on a positive economic trajectory. Looking at Spain's GDP growth in the early 1990s as an example, (Barcelona 1992) it is practically difficult to separate the "Olympic Effect" from the overall European integration process. Without plausible counterfactuals, attributing growth to the Games runs the danger of conflating correlation with causality (Brückner and Pappa, 2015).

Most people believe that mega-events do boost the economy, although the benefits are usually short-lived and happens right after. During the build up, growth usually increases, and it may even reach its highest point during the event. However, once the event is over and tourists depart, economies often go back to their normal growth patterns. The effect on developed hosts is modest in terms of economic magnitude. For emerging economies, the initial boost may be more noticeable unlike already emerged economies, but it is frequently countered by the financial pressure of debt financed infrastructure and long-term maintenance expenses (Matheson, 2012; Baade and Matheson, 2016).

These results are significant for this thesis. They demonstrate that conventional GDP figures may understate or distort the economic implications of mega-events unless timing and counterfactuals are properly addressed. This prompts the application of panel regression and difference-in-differences methodologies in the next chapters to check if GDP growth, FDI inflows, and other indicators diverge from anticipated trends.

2.4 – Tourism: Gains, Displacement, and Duration

If there is one way through which mega sporting events are routinely anticipated to provide real results, it is international tourism. Bid documents frequently stress the prominence of the Games or the World Cup as possibilities to "put the host nation on the map" and attract millions of tourists. The expectation is that the worldwide media focus will result in both an instant surge of fans and a long-term legacy for destination branding. However, like with GDP, empirical data is varied.

At first glance, the Olympics appear to be more effective than the World Cup in terms of increasing foreign arrivals. According to Vierhaus (2019), hosting the Summer Olympics enhances tourist arrivals not just during the event year, but also for eight years before and up to two decades following. This long-term effect shows that the Games serve as a type of continuous worldwide promotion, boosting the host's reputation as a tourist attraction. Case studies over the years have supported this tendency for some time. Barcelona 1992 is commonly cited as an example, with the city's tourist numbers increasing in the 1990s, a transition attributed not just to the Games themselves, but also to its subsequent urban reconstruction and branding.

In comparison, the World Cup produces strong effects, but they last only for a short period. Hosts often experience a boom in arrivals during the tournament, followed by a fall in the succeeding years. In fact, several research show that overseas arrivals fall below trend four years after hosting,

as was the case with Germany in 2006 as well as South Africa in 2010 (Vierhaus, 2019). The reasoning behind this is simple to understand; while the event itself will draw die-hard football fans, it will also drive away average visitors who avoid host cities during the tournament due to high prices, traffic, or simply due to security concerns. As a result of this crowding-out effect, the net benefit is frequently less than expected. Despite massive marketing activities, London 2012 had a 6% decrease in foreign visitors over the Olympic time (Zawadzki, 2013).

The relocation issue emphasises a larger point since the total tourist numbers might be deceptive. Visitors to matches may spend more than ordinary visitors, although their spending is frequently focused on event-specific areas such as tickets and hospitality. At the same time, regular leisure travellers, who could have contributed to overall economic expenditure, are prevented from doing so. As a result, the net tourist increase is less spectacular than boosters anticipate.

Another key distinction is between regional and national consequences. While the host city may experience a noticeable flood of tourists, the national picture is frequently less evident. For example, Atlanta (1996) and Sydney (2000) had an increase in event-time arrivals, but the spillover to the rest of the United States and Australia were negligible (Vierhaus, 2019). Similarly, World Cup events held in numerous places might dilute the impact, with certain areas benefiting more than others.

The literature also emphasises the need of strategic planning. Hosts that actively use the event to promote long-term tourism are more likely to leave a lasting legacy. Sydney (2000) implemented targeted programs to attract Asian tourists, while Barcelona used the Games to make big changes to the city. In contrast, Athens (2004) and Rio (2016) struggled from inadequate coordination, unfavourable media coverage, and unused infrastructure, limiting their post-event tourism returns. (Vierhaus, 2019; Baade and Matheson, 2016)

Comparative studies have shown a consensus of heterogeneity. The Summer Olympics shown that they may bring in more long-term tourists, particularly when paired with destination branding and infrastructural enhancements. The Winter Olympics, with its narrow appeal and focus on smaller communities, rarely leave a lasting worldwide tourism impact. Despite it massive broadcast audience, the World Cup has more transitory effects with the number of tourists spiking during the tournament year and then swiftly falling down, with no indication of a long-term legacy.

In this thesis, the implications are twofold. First, any analysis of foreign visitor arrivals must distinguish between one-time spikes and long-term trends. A difference-in-differences model is ideal for this since it can account for both the anticipation effect, which means higher arrivals before the Games, and the long-term impact of the event. Second, the discrepancy between Olympic and World Cup hosts emphasises the need of accounting for event type as a source of

variation. Treating "mega-events" as a single category risks missing the dynamics that make certain events more beneficial than others.

In conclusion, the tourist tale reinforces the overarching theme of this literature review that while mega-events might produce benefits, they are frequently inconsistent, and prone to exaggeration. The problem is not just whether tourism grows, but whether it grows in ways that justify the massive financial investments necessary to host.

2.5- Financial Markets: Announcement Effects and Real-Time Pricing

While GDP and tourist research look at long-term effects, financial markets look at things in a different way. Stock values change in real time based on new information, which makes them a good way to understand how investors feel about the economic possibilities of mega sporting events. The question is whether markets value hosting announcements and if these views are proven during the events themselves.

Most evidence points to announcement effects. When a country gets to host the Olympics or the World Cup, its stock market indices may exhibit odd returns. Zawadzki (2013) discovered that national markets responded positively to host selection announcements, notably in the construction and services industries. Similarly, Mohamed et al. (2015) demonstrates that the day of the announcement generates statistically significant anomalous returns, particularly in smaller economies with a bigger relative magnitude of the event.

By comparison, the tournament itself hardly causes significant market changes. Studies on the Athens 2004 Olympics, for example, revealed no significant changes in the Greek stock index during the Games, however, sponsor corporations did have tiny positive returns (Mohamed et al., 2015). Broader investigations reflect this pattern through the markets. The markets appear to rise in expectation of infrastructure developments, sponsorships contracts, and future tourists, but once the event begins, little new information is provided and returns normalise.

The contrast between announcements and event time dynamics reflects how investors perceive information. Markets are forward looking. The awarding of a mega event is interpreted as a signal of future investment and worldwide exposure. Construction, real estate and hospitality stocks may rise as investors expect contracts and increased demand. When the event occurs, however, such expectations are either already priced in or outweighed by worries about cost overruns and limited long-term advantages

Not all announcements, however, elicit good responses. Berman et al. (2000) investigated Sydney's successful bid for the 2000 Olympics and discovered only modest effects in a few industrial portfolios. Mirman and Sharma (2010) even documented negative anomalous returns for the Winter

Olympics hosts, implying that investors may perceive the expenses as outweighing the advantages. This variation implies that context is important, developed versus emerging economies, the credibility of organisational capabilities, and the size of necessary infrastructure all influence market reactions (Mohamed et. al, 2015).

Another common element is the relative size of the economy. According to Mohamed et al. (2015) smaller economies have higher abnormal earnings since hosting is a more disruptive shock compared to their baseline (Mohamed et al. 2015). For bigger, more diverse countries, such as the United States or Germany, the Olympics or World Cup, even though they are very big in absolute terms, may be economically unimportant in relation to national GDP. This explains why Sydney and Athens stock markets were more sensitive than London and Tokyo's (Porter and Fletcher, 2008).

Sectoral analysis enriches the picture. While aggregate indices may have a muted effect, construction, transportation, and consumer discretionary firms frequently see extraordinary gains. Floros (2010) discovered beneficial results for national sponsors of the Athens Olympics, whereas Samitas et al. (2008) showed similar improvements for both domestic and foreign sponsors. This data indicate that the "winners" of mega-events are frequently certain industries rather than the whole economy (Floros, 2010; Samitas et. al, 2008).

Financial market research provides a message of both short-term optimism and long-term pessimism. Announcements cause rallies, indicating anticipation for contracts, visibility, and economic boost. However, a shortage of high returns during the events themselves, as well as the lack of convincing evidence of sustained post-event success, suggests that markets, like academic researchers, realise the limited macroeconomic upside once costs are taken into account. These ideas have a direct impact on Model 1's design in this thesis. The methodology examines Cumulative Abnormal Returns (CARs) surrounding Olympic and World Cup announcement and event periods to see if markets consistently reward hosts with optimistic expectations. More crucially, it assesses whether these effects vary by event type and economic situation. In doing so, the study addresses a central question: Are mega sporting events actual economic possibilities, or are they mostly symbolic spectacles with financial promises that are priced in but very rarely fulfilled?

2.6 – Infrastructure, Urban Development and Long-Term Legacy

Beyond short-term tourism and investment, one of the most compelling reasons for hosting mega sporting events is the prospect of new infrastructure and urban regeneration. Some say that the Olympics or World Cup serve as a deadline and political mandate for governments to expedite long-delayed transportation, housing, and utility developments. Barcelona 1992 is frequently cited as an example where the Games were utilised to reconstruct the waterfront, expand the airport and reposition the city as a worldwide tourist destination, with impacts that went far beyond sports.

However, the same literature advises against the “white elephant” problem. Purpose-built stadiums and facilities usually lack viable post-event usage, leaving cities with hefty maintenance expenses and little returns. Athens 2004 is a cautionary tale since even though the Games briefly elevated Greece to the global spotlight, several of its venues fell into neglect, leaving taxpayers with persistent financial problems. Rio de Janeiro 2016 faced similar challenges, with venues and transit investments quickly underutilised in the aftermath of the political and economic crisis (Baade and Matheson, 2016).

For hosts in emerging economies, these challenges are compounded by very tough trade-offs. Matheson (2012) notes that while disasters may prompt rapid investment in urban infrastructure and housing, they often divert limited resources from critical social concerns. In 2010, South Africa built several new stadiums, but there was little indication that the cities were becoming more connected. These examples show how opportunity cost may be risky when money spent on infrastructure for events might have been utilised to promote more inclusive or productive projects (Preuss, 2009).

However, not all legacies are negative. Mega-events may trigger long-term changes when investments are linked with urban goals. London 2012 utilised the Games to revitalise East London, with housing, transit and parkland improvements that continued to benefit the residents of London a decade later (Azzali, 2017). Similarly, Beijing’s 2008 Olympics, while expensive, left a legacy of modernised transit infrastructure and increased worldwide attention, reinforcing the city’s image as a growing economic power (Yamawzki and Tomaz, 2019).

Overall, data indicates that infrastructure legacies are heavily context dependant. Success stories need integration into larger urban development plans, whereas failure is caused by greed and political overreach. The essential discovery in this thesis is that infrastructure costs and legacies complicate the financial dynamics of mega-events, although some hosts accomplish true urban revitalisation, many acquire fiscal burdens that weaken any short-term economic advantages.

2.7 – Intangible and Political Dimensions

While most studies focus on quantitative economic impacts, mega sporting events also produce a number of intangible effects. Hosts frequently emphasise the “feel-good-factor”, a brief surge in civic pride and worldwide visibility. South Africa’s 2010 World Cup, for example, was generally regarded as a symbol of post-apartheid reintegration, with Nelson Mandela’s appearance at the opening ceremony establishing a watershed moment in national identity (Nawalkha,2024). Similarly, both of Barcelona 1992 and London 2012 are recognised as cultural watershed moments that transformed the image of their host cities as dynamic and internationally connected (Balibrea, 2017).

These intangible benefits may also have political drawbacks. Zimbalist (2015) says that the IOC and the FIFA are both monopolies that charge host nations rent and often require expensive

infrastructure and concessions. Protests in Rio (2016) and Athens (2004) demonstrated grassroots outrage at the diversion of public funds to elite events while social services were limited (Gold and Gold, 2017). In extreme situations, such as Mexico 1968, large-scale events have been associated with political oppression and civil unrest (Brewster and Brewster, 2009).

The literature therefore views intangible impacts as a two-edged sword where although hosts may gain symbolic status and national pride, they also risk social conflicts and reputational harm if the costs and disruptions outweigh the spectacle.

2.8 – Methodological Lessons for Research

A common theme in the literature is that assessed outcomes often deviate significantly from the optimistic expectations made in bid papers. This difference is caused by both political reasons and problems with the way things are done. Ex-ante studies, frequently employing input-output or computable general equilibrium models, tend to overestimate outcomes as they neglect crowding out and replacement. Conversely, ex-post econometric research has advanced the field towards more dependable causal inference (Matheson, 2006).

Difference-in-Differences (DiD) designs are currently widely utilised to compare hosts and non-hosts while considering global trends. Brückner and Pappa's (2015) study of Olympic anticipation effects demonstrates the effectiveness of this technique in pinpointing periods where development accelerates before the Games and diminishes after. Event research approaches adapted from finance have been applied to stock markets to see how soon information regarding hosting is priced in (Mohamed et. al, 2015). In contrast, panel regression models enable cross-country comparisons of GDP, inflation, trade and gross fixed capital formation across different hosts (Streken, 2006).

However, even these approaches have limits. Selection bias remains a concern since there may be some cases where those nations that bid for and win mega-events may already differ significantly from non-hosts. Measurement decisions are also important. Using tourism as an example, the observed impacts may differ depending on the chosen criteria, including arrivals, receipts or the geographic scope of measurement (city or national level).

These emphasise the significance of integrating different methodologies to triangulate data for this thesis, including DiD, panel analysis and event studies. By doing so, it is feasible to get beyond the optimism of promotional estimates and more objectively examine whether mega-events create genuine economic and financial benefits.

2.9 – Conclusion and Research Gaps

The literature on mega sporting events demonstrates a clear pattern that expectations frequently outperform the results. The advantages of GDP development are frequently modest and tend to be anticipatory rather than enduring (Brückner and Pappa, 2015). The Summer Olympics can leave a longer legacy than World Cups, which often have shorter rises that are sometimes lessened by crowding out (Vierhaus, 2019). Financial markets reward hosts at the time of announcement but show minimal reaction as events progress (Mohamed et. al, 2015). Infrastructure and urban development may be revolutionary, but, yet again, can also result in costly white elephants (Baade and Matheson, 2016).

Despite these findings, significant gaps remain. Few research combines numerous outcome factors, and even fewer connect macroeconomic, tourism, and financial market views. The role of context, developed versus rising hosts, democratic versus authoritarian countries, also warrants more consideration. This thesis aims to close these gaps by using complementary econometric methodologies to a sample of Olympic and World Cup hosts, providing a more comprehensive understanding of the financial dynamics of mega sporting events.

Chapter 3 – Methodology

3.1 – Introduction to Methodology

This thesis looks at the financial dynamics of mega-sporting events, namely the Olympic Games and the FIFA World Cup. Even though these types of events are often cited in policy discussions as being drivers for development, tourism, and international investment, the literature that was reviewed in Chapter 2 repeatedly shows that the results are unclear, context dependant, and usually overblown in ex-ante estimates. To properly assess these dynamics, this thesis uses a quantitative, econometric method based on secondary data (Matheson, 2012; Vierhaus, 2019).

The approach used takes into account both the nature of the research issue and the availability of data. Mega-events are global phenomena with measurable implications for macroeconomic indices, tourism flows and financial markets. As Baade and Matheson (2016) emphasise, understanding these events require a transition from anecdotal accounts to a thorough examination of observable outcomes. For this reason, econometric models are used to separate actual event impacts from wider macroeconomic trends.

Three complimentary methods are used in this thesis. First, an event study is conducted which assesses the stock market reactions around the announcement and hosting dates, revealing how financial markets price expectations in real time (Mohamed et. al, 2015). The second method is a DiD approach. It isolates causal effects by comparing host nations to suitable control groups, allowing for the detection of anticipatory effects and post-event trajectories (Matheson, 2012). Finally, a panel regression is used to determine whether hosting has an effect on GDP growth across the sample, controlling for trade, inflation and investment variables (Brückner and Pappa, 2015).

By combining theses approaches, the methodology creates a comprehensive framework that captures the multifaceted nature of mega-events. It also follows best practice recommendations for impact assessment, which emphasise openness and consideration of both long-term and short-term consequences (OECD, 2023). The sections that follow provide detailed information on each model's philosophical stance, data sources and technical specifications.

3.2 – Research Design and Philosophy

This thesis uses a case study-based econometric design, integrating cross-country quantitative research with a close look at specific Olympic Games and the FIFA World Cup hosts. This case study component is warranted because mega-events are distinct, one-time shocks that occur at identifiable points in time. This facilitates comparative study across several settings (Baade and Matheson, 2016; Nawalkha 2024). Yin (2018) asserts that case study methodologies are particularly effective for analysing intricate, context dependant phenomena characterised by the interaction of several elements, rendering them suitable for events like the Olympics and World Cup. By focusing on different host nations, the study covers both developed and emerging

economies, addressing a gap in the literature regarding the uneven distribution of costs and benefits across different economic contexts (Matheson, 2012).

Philosophically, the research is based on a positivist's paradigm, which holds that social and economic events can be examined using observable, quantitative facts. This position is common in the economics of mega-events, where researchers utilise quantitative tools to examine causal assertations regarding GDP, investment, and tourism impact (Brückner and Pappa, 2015; Vierhaus, 2019). According to Saunders et al. (2019), positivism is best suited for research that seeks objectivity, and this supports the thesis's econometric methodology. Positivism is applicable here since the goal is not to record subjective sensations of hosting, but rather to ascertain whether observable financial processes exist and continue over time.

Previous study findings also influence the design. As Baade and Mathseon (2016) point out, ex-ante projection models tend to overestimate benefits since they can only rely on optimistic multipliers. Ex-post studies, on the other hand, provide more credibility while treating counterfactuals differently. This thesis addresses these methodological problems by incorporating the three approaches mentioned previously into a case study framework, triangulating data across various variables.

Ultimately, the study is quantitative, utilising secondary data from reputable international sources, including the World Bank and national stock markets. Using secondary data is in conformity with all the rules, which stress the need of being transparent and being able to compare. It also reflects optimal methodologies in mega event research, when direct data collection is infeasible owing to the magnitude and length of the events (OECD, 2023).

3.3 – Data Sources

This thesis utilises secondary data obtained from reputable international institutes and financial databases. As stated before, the secondary sources chosen follow all the rules, which show how important it is to be open and able to compare things in order to understand world events (OECD, 2023). The data use is split into three groups: macroeconomic indicators, tourism flows, and financial market data. Official information about the years of the events backs up these groups.

3.3.1 - Macroeconomic Data

The macroeconomic metrics were gathered from the World Bank's World Development Indicators (WDI) database (World Bank, 2024). The variables include the following:

- GDP per capita (constant 2015 US$) – to determine how hosting affects national income and growth trends. This variable is common in empirical studies investigating the macroeconomic implications of mega sporting events (Brückner and Pappa, 2015).
- Foreign Direct Investment net inflows (BoP, current US$) – these are included since hosting can serve as a symbol of openness and modernity, possibly encouraging foreign investment (Zimbalist, 2015)

3.3.2 - Tourism Data

Tourism data were obtained from the United Nations World Tourism Organization's (UNWTO) statistical database (UNWTO, 2024). The primary variable is:

- International Tourist Arrivals (number of visitors) – these are often regarded as one of the most immediate and apparent indicators of mega event effect. Prior research, such as Vierhaus (2019), show that the Olympic Games are connected with continuous increases in arrivals, but the World Cup causes short-term surges which are later followed by a decrease.

This metric includes both direct inflows during event years and legacy impacts in the years preceding and following.

3.3.3 - Financial Market Data

Stock market data were gathered from Investing.com, which offers daily time series data for key national indices. The indices used correspond to the stock markets of host countries:

- FTSE 100 (UK) for London 2012;
- Nikkei 225 (Japan) for Tokyo 2021;
- Shanghai Composite (China) for Beijing 2008;
- JSE All Share (South Africa) for 2010 World Cup;
- Bovespa (Brazil) for 2014 World Cup;
- RTS Index (Russia) for 2018 World Cup.

Event windows were established around both announcement dates and opening ceremonies, allowing for comparison with data from research such as Mohamed et al. (2015), which reveal large anomalous returns for hosts surrounding bid announcements.

3.3.4 - Event Selection and Hosting Data

The events analysed are of a mixture of recent and some older version of both the World Cup and the Olympic Games with different economic levels. Hosting information was verified against official records from the IOC (olympics.com) and FIFA (fifa.com). These sources give official confirmation

of host nations and the year it took place, guaranteeing that event timing is accurate in econometric models.

There were three selection criteria:

- Data availability – hosts that have access to reliable macroeconomic, tourism and financial data.
- Comparative variety – inclusion of both developed and emerging economies, reflecting the literature's emphasis on disparities in cost-benefit distribution.
- Relevance – the events examined include current editions of the Olympics and World Cup, but the database also includes older historical series if needed. This is done to enable the study to contextualise current outcomes within a longer-term comparison framework.

3.4 – Event Study

The first model uses an event research approach to assess how national stock markets react to significant sporting events, especially the announcement of hosting rights and the start of the event itself. The efficiency market theory says that prices quickly take in new information, which makes financial markets a great way to see how investors feel. Stock prices immediately show how people feel about the economy, unlike GDP and tourism, which take longer to show. This makes them a useful way to tell if big events boost economic confidence (Potrykus and Zawadzki, 2025).

The main purpose is to determine whether investors believe that hosting these events will have a sufficiently large effect on the stock market returns to justify the investment. In other words, does announcements and the start of events cause Abnormal Returns (ARs) and Cumulative Abnormal Returns (CARs) that are different from what would be expected based on how the global market is moving? This emphasis follows Zawadzki (2013), who identified the stock market as an underexplored yet informative pathway of mega event effect.

The study is based on daily stock index performances for host nations. Two event windows were created:

- Announcement window: (-5,+5) trading days from the official announcement of hosting rights.
- Event beginning window: (-5,+5) trading days from the start of the Games or the World Cup.

3.4.1 - Methodology

Daily closing prices are collected for three indices:

Index i = 1: the host country's main index (for example, Shanghai Composite for 2008 Olympics)

Indices i = 2 and i = 3: two benchmark indices (for example, S&P 500 and Hang Seng for Olympics 2008).

Daily returns are then calculated as the percentage change in closing prices from one day to the next:

$$R_{it} = \frac{P_{it} - P_{i(t-1)}}{P_{i(t-1)}},$$

where R_{it} is the daily return of index i on day t, P_{it} is the closing price of index i on day t, and $P_{i(t-1)}$ is the closing price of index i on day t-1.

A Global Benchmark Return is constructed using the two benchmark indices:

$$R_{benchmark,t} = \frac{R_{2t} + R_{3t}}{2}.$$

It represents the expected normal return without the event.

Abnormal returns capturing deviations of the host country's main index from the benchmark are calculated as follows:

$$AR_t = R_{1t} - R_{benchmark,t}$$

where AR_t is the abnormal return on day t, R_{1t} is the host country's main index on day t, and $R_{benchmark,t}$ is the global benchmark return on day t.

These are then consolidated into cumulative abnormal returns measuring the total impact of abnormal returns across the event window:

$$CAR_t = \sum_{k=1}^{t} AR_k$$

where CAR_t is the cumulative abnormal return up to day t. This enables the identification of whether markets systematically reward or penalize hosts.

This specification follows the traditional event research model by Brown and Warner (1985), which uses short event windows to isolate the impact of new information and formalises the use of abnormal and cumulative abnormal returns in financial econometrics.

3.4.2 - Empirical Basis

Previous research demonstrates mixed and context dependant reactions:

- Positive effects are sometimes recorded during the announcement phase, especially in smaller economies with elevated expectations for foreign investment and infrastructure enhancement (Mohamed et al., 2015).
- Zawadzki (2013) found that some events, like Athens 2004 and Beijing 2008, had an effect on CARs, while others had little or no effect. This shows that stock responses might be different depending on the scenario.
- Berman et al. (2000) pointed out that Australia's market did not respond significantly to winning the Sydney 2000 Olympics, with the exception of specific industries such as construction.

These findings support the notion that investors may respond more to anticipated capital inflows than to actual occurrences, and that short-term euphoria frequently fades once costs and opportunity trade-offs are fully recognised.

3.4.3 - Application in this Thesis

The event research for the chosen Olympic and FIFA World Cup hosts was carried out using daily return data from investing.com. The results revealed mixed reactions:

- Announcement stages produced moderate positive CARs for some events, notably in emerging economies, in line with the "anticipation effect" literature (Brückner and Pappa, 2015).
- The event's start caused minimal or uneven impacts. While some hosts had temporary benefits, the majority of events exhibited no meaningful variation from the standard, confirming with the findings of Zawadzki (2013).

3.4.4 - Contribution

This model emphasises the short-term financial signalling effect of mega-events. While long-term GDP or tourist gains remain uncertain, stock market reactions show that hosting can momentarily increase investor morale, however, this is not observed consistently or in all settings. By capturing these short-run dynamics, the event study complements the panel regression and also the difference-in-differences models, providing a more direct perspective on market-based expectations.

3.5 – Difference-in-Differences

The next empirical strategy in this thesis is a difference-in-differences (DiD) design, which seeks to determine the causal influence of hosting mega sporting events on national economic results. Unlike panel regression, which reveals connections over a large sample, the DiD methodology gives a more accurate counterfactual by specifically comparing changes in host nations to those in non-host across time.

The DiD model is used to examine if hosting the Olympics or the World Cup has major effects on:

- GDP (constant 2015 US$)
- FDI net inflows (BoP, current US$)
- International tourist arrivals

Each of these variables, referred to as the outcome variable, was chosen to reflect the three most often mentioned benefits of mega-events in policy which are: the macroeconomic growth, if there is any increase in tourist demand, and also how appealing it is to foreign investors (Baade and Matheson, 2016; Nawalkha, 2024; Vierhaus, 2019).

3.5.1 - Timeframe

The analysis spans 6-10 years before and after each event. This allows for the detection of both anticipation effects observed by Brückner and Pappa, (2015), who saw GDP, investment and consumption rising well before the Games and also the legacy effects as was emphasised by Vierhaus (2019).

3.5.2 - Model Specification

First, data are structured as a panel dataset with country and year indices, allowing for the exploitation of both cross-sectional and time-series variation. To capture dynamic effects, the model incorporates a one-period lag of the outcome variable, ensuring that past economic performance is controlled for when estimating current outcomes. The model is estimated using a fixed-effects specification that includes both country-specific effects (to control for time-invariant national characteristics) and time effects (to account for global shocks common to all countries in a given year such as the 2008 financial crisis or Covid-19). A DiD indicator variable is included to measure the treatment effect of hosting an event on the outcome variable. The model is estimated with standard errors clustered at the country level to correct for within-entity correlation (Brückner and Pappa, 2015).

The DiD model can be expressed as:

$$Y_{it} = \beta_0 + \beta_1 Y_{i(t-1)} + \beta_2 DID_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

where:

- Y_{it} is the outcome (GDP, FDI or tourist arrivals) for country i in year t;
- $Y_{i(t-1)}$ is the 1-year lagged outcome (dynamic component);
- DID_{it} is equal to 1 if country i hosted in year t, and equal to 0 otherwise (treatment dummy variable capturing the hosting effect);
- μ_i and λ_t are the country-specific and time fixed effects, respectively;
- β_0 is the overall intercept (a common baseline);
- β_1 is the regression coefficient capturing persistence in GDP over time, after accounting for country-specific and time fixed effects and any treatment effect captured by DID;
- β_2 is the regression coefficient measuring the average treatment effect of hosting on the outcome variable, after controlling for country-specific and time fixed effects and 1-year lagged outcome;
- ε_{it} is the error term.

This formulation aligns with the conventional econometric framework for DiD models as specified in Angrist and Pischke (2009) and Wooldridge (2010).

Following estimation, several diagnostic checks are conducted: residual plots (to test for randomness and linear specification), histogram and QQ plots of residuals (to assess normality) and variance inflation factors (to detect multicollinearity among regressors). Together, this approach ensures that the estimated effect on the outcome variable is robust to common econometric issues in panel data analysis.

3.5.3 - Empirical Basis

The DiD approach has been used in numerous notable studies such as the following:

- Baade and Matheson (2016) emphasise the need of ex-post causal designs, as ex-ante estimates typically overstate benefits.
- Brückner and Pappa (2015) highlight the relevance of anticipation effects by observing that output and investment increase many years before the Games, peaking four years before.
- Vierhaus (2019) shows that the effects of tourism are very different between the Olympics and the World Cup. The Olympics usually lead to long-term gains, whereas the World Cup often leads to losses.
- Nawalkha (2024) points out the diverse outcomes of recent World Cups (South Africa 2010, Brazil 2014, and Russia 2018), indicating that whereas short-term tourism and FDI gains were realised, long-term macroeconomic advantages were much less assured.

3.5.4 - Contribution

This thesis fills a significant gap in the literature through the use of the DiD approach to examine all three mentioned variables. Previous research has concentrated only on a particular dimension and not all of the three variables. Integrating these results enables a more thorough assessment of whether mega-events provide long-term economic gains or largely induce short-term adjustments.

Consistent with earlier findings, DiD is expected to reveal:

- Limited GDP impacts, with any observed increase concentrated in pre-event years.
- Positive but short-lived tourist increases which are higher for the Olympic Games when compared to the World Cup.
- Mixed FDI inflows, which differ greatly by national environment.

3.6 – Panel Regression

The last model in this thesis is a panel regression to test whether hosting a mega sporting event yields significant changes in GDP growth across nations over time. Panel methods are particularly suited for this setting because they leverage both cross-sectional variation between years, while adjusting for unobserved heterogeneity (Sterken, 2006).

The purpose is to see if hosting the Olympic Games or the FIFA World Cup has a demonstrable impact on GDP growth after broader macroeconomic factors are considered. This method relies on research such as that of Streken (2006), who explored the link between mega-events and economic development, and also the research of Brückner and Pappa (2015), who underlined the relevance of expectation effects in determining observed macroeconomic results.

3.6.1 - Model Specification

To examine the impact of hosting events on economic performance, we employ a panel data regression model that accounts for both short- and long-term effects. The model takes into account important macroeconomic parameters including inflation, trade openness, and investment, as well as the timing and accumulation of events. The research incorporates lagged and cumulative event variables, covering both the immediate effects of hosting an event in a certain and the subsequent delayed consequences, as well as the enduring influence of recurrent event hosting. To account for unobserved differences across nations and common shocks that affect all countries in a given year, fixed effects that are distinct to each country and year are added. This specification allows for a dynamic assessment of how hosting events contributes to GDP growth over time (Streken, 2006; Brückner and Pappa, 2015).

The regression model is specified as:

$$GDP_{it} = \beta_0 + \beta_1 Inflation_{it} + \beta_2 Trade_{it} + \beta_3 GFCF_{it} + \beta_4 Event_{it} + \beta_5 Event_{i(t-1)} + \beta_6 Event_{i(t-2)} + \beta_7 EventCumulative_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

where:

- GDP_{it} is the GDP growth for country i in year t;
- $Inflation_{it}$ measures consumer price inflation for country i in year t, capturing macroeconomic stability;
- $Trade_{it}$ is the trade as a percentage of GDP for country i in year t, included as a proxy for openness to global markets;
- $GFCF_{it}$ is the gross fixed capital formation as a percentage of GDP for country i in year t, reflecting investment activity;
- $Event_{it}$, $Event_{i(t-1)}$ and $Event_{i(t-2)}$ are indicator variables equal to 1 if an event was hosted in country i during the current year, 1 year ago, and 2 years ago, respectively (and equal to 0 otherwise);
- $EventCumulative_{it}$ records the total number of times country i has hosted an event up to year t, capturing the long-term/historical effect;
- μ_i and λ_t are the country-specific and time fixed effects, respectively;
- $\beta_0, \dots, \beta_7$ are the regression coefficients to be estimated (with similar interpretations as for the DiD model);
- ε_{it} is the error term.

The fixed effects specification for panel regression adheres to the conventional methodologies outlined in Baltagi (2005) and Wooldridge (2010), which provide the econometric principles for examining longitudinal country-level data.

3.6.2 - Data and Sample

The dataset spans the years 2000-2024 and includes both hosts and non-hosts. The official websites of both events were used to provide hosting years and nation identity, while the World Bank's World Development Indicators (WDI) provide GDP, inflation, trade, and gross fixed capital creation information. This timeline enables the model to describe the contemporary era of mega-events, which have gotten more expensive and globalised (Baade and Matheson, 2016).

3.6.3 - Expected Findings from Literature

Independent research show that the favourable effects of hosting on GDP are frequently short-lived and transient, not permanent. Brückner and Pappa (2015) found that productivity and investment increased in the years leading up to the Olympics, but this effect diminishes once the Games

conclude. Baade and Matheson (2016) assert that when opportunity costs and crowding-out effects are included, net GDP impacts are often negligible. The OECD (2023) criteria say that the ideal way to do an impact assessment is to include inflation, trade, and investment as controls. This makes sure that the results are not affected by bigger macroeconomic changes.

3.6.4 - Contribution

By determining if the event variables are statistically significant predictors of the GDP growth after controlling for inflation, trade, and investment, this model provides a strong test of the GDP growth claim that was made in many papers. Previous research suggests that mega-events do not consistently increase GDP in host nations. Therefore, it is expected that the regression coefficients of the event variables will not be significantly different from zero (Matheson, 2012; Nawalkha, 2024).

3.7 – Limitations and Robustness Considerations

While the models used in this thesis improve causal inference over ex-ante projections, some limitations remain. These issues are widely documented in mega event literature, emphasising the importance of cautious interpretation.

An ongoing issue is that much of the economic activity takes place before the Games, rather than during or after them. According to Brückner and Pappa (2015), GDP, consumption and investment in Olympic host countries tend to climb 5-7 years before the event, peaking around four years prior and then declining. This complicates panel and DiD models since pre-trends might violate the parallel trends assumption (stating that in the absence of the treatment, the outcome of the treatment group would have followed the same trend over time as the control group) and inflate estimates if not fully accounted for.

Tourism statistics demonstrate the difficulties of defining results consistently. As already mentioned, Vierhaus (2019), discovered that the Summer Olympics result in long-term increases in arrivals, while it is different for the World Cup. The findings differ depending on whether tourism is evaluated by arrivals, nights, and even receipts. Also, FDI inflows are dynamic and driven by global financial circumstances, making it difficult to identify event impacts (Matheson, 2012).

According to Zimbalist (2015) and Baade and Matheson (2016), ex-ante studies routinely overestimate benefits by disregarding crowding out, leakages, and the substitution effects. Even ex-post econometric work confronts selection issues since nations that win hosting bids are in most cases on upward economic paths, which might bias estimates upward. According to Streken (2006), it is difficult to distinguish correlation and causation in the absence of robust counterfactuals.

The dataset was thoroughly cleansed before starting the econometric analysis. Missing numbers were eliminated and, when feasible, cross-checked against additional data sources. Trading days that corresponded with national holidays or stock market closure were removed from the event analysis to prevent CAR estimates from being distorted. Countries with missing time series were excluded from the DiD and the panel regression models to guarantee comparability between control and treatment groups. One significant restriction is that many macroeconomic statistics are not consistently provided. While the models accommodate for this by depending on most comprehensive available data, this restriction must be noted when evaluating the data.

Finally, data availability constrains the extent of this study. Not all host nations have consistent FDI or tourism data, and some emerging economies have inaccurate national accounts. The removal of Qatar 2022 from the event study due to insufficient data highlights this difficulty.

3.8 – Chapter Summary

This chapter describes the methodological approach used to evaluate the financial dynamics of mega sporting events. Three complementary models were used, a panel regression to determine whether hosting influences GDP growth while controlling for macroeconomic factors, an event study to capture short-term stock market reactions to hosting announcements and event start dates, and also a difference-in-differences design to estimate causal impacts on GDP, tourism and FDI across hosts and non-hosts. Data were obtained from credible international sources such as the World bank, UNWTO, investing.com, and official records of IOC and FIFA records.

These approaches operate together to give a thorough and multi-faceted review that looks at both macroeconomic results and judgements made in the financial markets. The next chapter examines the results of these models and evaluates their alignment with existing evidence.

Chapter 4 - Analysis and Results

This chapter presents the study's empirical findings. To illustrate the financial dynamics involved in order for one to host major sporting events, three econometric approaches were used. First, an event study was carried out to examine short-term stock market reactions to the hosting of major sporting events, showing us how these markets reacted to the announcement and start of a major event. Next, a Difference-in-Differences (DiD) framework was applied to recognize probable causal changes by looking at a set of host countries' performance compared with a control group over the same period of time. Lastly, a panel regression was used to take a deeper look at the macroeconomic effects across different nations with some being previous hosts and some non-hosts, with an emphasis on four variables: GDP, inflation, trade openness and investment. These methodologies enable the research to consider both long-term macroeconomics implications and also the immediate movement in the market.

4.1 – Event Study Results

This section presents the findings of the event study methodology, where stock market reactions to major sporting events were looked at. Two event windows were considered, the first being the announcement window, which covered the period prior and after the host nation was announced, and the second window being the event window itself which entailed of the days leading to the start of the event and after the opening day. To account for differences in host countries' stock market performance, cumulative abnormal returns (CARs) against global benchmarks such as the S&P 500 and Hang Seng were computed. The data from the six selected events give a similar outcome: short-term swings around the announcement and the start of the event itself of both the Olympic Games and the World Cup. Given that short, atypical returns, both positive and negative, are common, there is little evidence of consistent or viable financial advantages.

Beijing 2008 Olympic

Varying trends between the announcement and event windows can be seen in the Beijing 2008 Olympic results. The CARs started at 0.0044 throughout the announcement period, then decreased to a minimum of -0.0017 for a brief period before rising consistently. All in all, investor opinion toward the announcement was favourable, as indicated by the CARs' peak of 0.0368 by the close of the session. The market seems to have responded more optimistically, although the impact was still rather little.

On the other hand, the event window indicated something else. The CARs started at a peak of 0.0237. This was the highest peak during the Games, but then they soon started to decrease. Prior to partially stabilising and closing at -0.1209, the series hit the lowest point of -0.1636. This downward trend signifies that investors had no indication of long-term returns since the general financial market response during the Olympics was negative, even though there was an early positive reaction at the beginning of the Games.

South Africa 2010 World Cup

The South Africa 2010 World Cup Announcement window was always on the negative side. The CARs began at -0.0190, fell to a low -0.0621, then, even though there was a slight recovery to -0.0126, the series concluded at -0.0315. This trend shows that the Johannesburg Stock exchange responded carefully to the hosting decision, with potential investors being sceptical that the event would result in major short-term advantages.

The event window provided a more beneficial consequence. At the beginning, the CAR was on the positive side with a very slim 0.0017, then it dropped to -0.0074, and then rapidly increased as the event progressed. The index reached a high of 0.0247, which was also the closing value. This suggests that while initial World Cup effects were muted, market sentiment gradually improved. On the whole, the market registered a slight but obvious gain, placing the event period in positive territory relative to its cautious announcement reaction.

London 2012 Olympic

The 2012 London Olympics caused modest but transient changes in stock market results. The CARs underwent a little upward reaction during the announcement window. The series recorded a low of 0.0005 and a maximum of 0.0387, indicating a restricted range of fluctuations. The CARs had settled at 0.0044 by the end of the window, making the announcement period marginally favourable overall.

The visuals in the event window were more ambiguous. During the games, the CARs reached negative territory at -0.0145 while reaching a peak of 0.0290. This series concluded at -0.0117 suggesting a minimum net reduction throughout the whole window, but these gains were not maintained. This trend implies that although there were brief spikes in optimism during the actual Games, the market concluded the event with minimal long-term gain, resulting in a muted financial reaction to London 2012.

Brazil 2014 World Cup

When comparing the Brazil 2014 World Cup with previous events, this event generated a more favourable response from the financial market. The CARs varied quite a bit during the announcement period but remained on the positive side on most days. The CAR fell to -0.0088 before rising sharply to 0.0701, which was also the window's closing value. These results indicate a positive reaction from investors at the time of the hosting selection.

This positive trend was supported by the event window. The CARs began in positive territory, with the lowest being 0.0249 and a peak of 0.0664 during the window. By the end of the window, the CAR was at 0.0604, indicating that potential investors' mood remained robust. Overall, the Brazil 2014

case stands out from the rest for its favourable outcome regarding market response, both at the announcement stage and the event window.

Russia 2018 World Cup

Results from the Russia 2018 World Cup's announcement and event windows differed. The CARs had a typically upward trend during the announcement period. The series rose with the highest value being 0.0429 and the lowest being 0.0020. At the end, the CARs closed at 0.0214. This indicates that investors responded favourably to Russia's confirmation as host.

The event window, on the other hand, exhibited a more adverse market response. After dropping to a low of -0.0409, the CARs only partially recovered to -0.0163, which was also the closing figure. This suggests that investor sentiment was diminished during the World Cup, since the market stayed in negative territory the whole time. Ultimately, the Russia 2018 results show that the initial sense of anticipation around the announcement was not maintained when the event was actually held.

Tokyo 2021 Olympic

The Tokyo 2021 Olympic results show a moderate yet uneven market reactions. There was little difference in the CARs during the announcement time before trending upward. The series showed a low of -0.0067 but slowly made its way up to a high of 0.0189, ending the window period at 0.0178. This result suggests that there was a modestly good investor response at the time of hosting confirmation.

On the other side, the event window yielded fewer beneficial results. The CARs fell early on to a low of -0.0190, then briefly recovered to a high of 0.0224 before closing the window on a negative side with -0.0112. This track indicates that while there was some short-lived optimism during the Games, it was not sustained and, ultimately, the response of the market was negative. Taken together, the Tokyo 2021 findings illustrates that the initial exuberance around the announcement was not matched by long-term benefits throughout the event.

These six cases show the varying market response to mega-events. Brazil 2014 (both windows) had the most positive reactions followed by the announcement of Beijing 2008 and the event of South Africa 2010. On the other hand, Beijing 2008 (event), London 2012 (event), Russia 2018 (event), and Tokyo 2021(event) all finished on the negative side. The research reveals that even though announcements seem to stimulate initial excitement, it is all lost as the financial markets fail to maintain it as the events develop. Table 1 provides a consolidated overview of the cumulative abnormal returns (CARs) across all six cases, distinguishing between announcement and event window.

Event	Announcement Window (CAR)	Event Window (CAR)
Beijing 2008 Olympic	0.0368	-0.1209
South Africa 2010 WC	-0.0315	0.0247
London 2012 Olympic	0.0044	-0.0117
Brazil 2014 WC	0.0701	0.0604
Russia 2018 WC	0.0214	-0.0163
Tokyo 2021 Olympic	0.0178	-0.0112

Table 1 - Cumulative Abnormal Returns - Announcement and Event Windows Closing Values

4.2 – Difference-in-Differences

This second method covers the findings of the DiD study, which seeks to determine the causal influence of mega sporting events on the host country's economic performance. Unlike Model 1's event analysis, which focused solely on the short-term financial market reactions, the DiD approach compares the development of important macroeconomic indicators in host nations to those of a non-host control group. Through analysing both the treated and the control groups before and also after the event, the model helps in determining if hosting had a particular economic impact beyond broad global and regional trends.

As mentioned in Chapter 3, three outcome variables are considered: GDP, which looks and measures the overall performance; FDI, which reflects international capital flows and confidence in the host economy; and international tourist arrivals, which assess the host's attractiveness as a destination before, during and after the event. The research covered six case studies: the Sydney 2000 Olympics, the Beijing 2008 Olympics, the London 2012 Olympics, South Africa 2010 World Cup, Brazil 2014 World Cup, and Russia 2018 World Cup. These were chosen to represent both the Olympic Games and the World Cup as well as different economies.

The DiD results paint a complex picture. In some cases, hosting was linked to sector-specific gains, especially in international tourism, while in others, hosting was not associated with a statistically significant GDP or FDI increase. The following present the results for each event in turn, focussing on the three outcomes and emphasising any consistent patterns.

Sydney 2000 Olympics

The Sydney 2000 Olympics were the first scenario included in the DiD study. The DiD GDP results reveal that being in the treatment group (Australia) is linked with an additional rise of 7 billion USD compared to the control group, after accounting for lagged GDP, country fixed effects, and year fixed effects. This impact is statistically significant at the 5% level (p=0.041) indicating that hosting the Sydney 2000 Olympics resulted in a noticeable rise in GDP relative to comparable countries. It is crucial also to highlight that the specification accounts for unobserved heterogeneity between nations and global time shocks by including fixed effects, which increases the confidence of the calculated treatment.

The DiD results for FDI indicate that hosting the Sydney 2000 Olympics had no statistically significant influence. The estimated treatment impact was a decline of roughly 0.6 billion USD, with a p-value of 0.917, showing that FDI inflows to Australia were statistically indistinguishable from the control group. This shows that hosting did not have a measurable impact on foreign capital inflows.

The data for international tourism show no substantial treatment impact. The DiD coefficient was approximately 1.5 million fewer arrivals, with a p-value of 0.558, indicating that the number of foreign tourist arrivals in Australia was statistically similar to the control group. While the Games increased worldwide recognition, there was no significant rise in visitor arrivals.

Beijing 2008 Olympics

The DiD GDP results reveal that being in the treatment group, that is China, resulted in an extra rise of about 67 billion USD compared to the control group, after accounting for any covariates. This effect is highly statistically significant at the 1% level (p approximately 0), indicating that the Beijing 2008 Olympics coincided with a substantial and measurable increase in GDP relative to comparable nations.

This 2008 Olympics also had a significant impact on international investment and tourism, even though it was in different directions. The estimated treatment impact for FDI was roughly +45 billion USD, significant at the 1% level (p approximately 0), indicating a considerable increase in foreign capital inflows during the Games. International tourism had a considerable negative impact, resulting in an estimated 3 million fewer arrivals (p approximately 0). This shows that even though the Olympics reaches a great audience around the world while also drawing record breaking investment, tourism was hampered potentially to the crowding out effect or the replacement of local and foreign tourists.

South Africa 2010 World Cup

The DiD statistics for GDP suggest a considerable negative impact as a result of hosting the 2010 World Cup. The estimated treatment impact was -5.8 billion USD, with a p-value approximately 0, which indicates a highly statistically significant result. Therefore, once the covariates were accounted for, the GDP of South Africa during the tournament was significantly lower than the counterfactual situation represented by the control group. The findings also indicate that the expected growth advantages were overshadowed by other factors such as high event-related expenses.

The 2010 World Cup had an inverse effect on FDI and tourism. The estimated treatment impact for FDI was around -903 million USD, statistically significant at the 5% level (p=0.0288). This means that there was a decrease in foreign investment when comparing South Africa to the control group. On the other hand, the effect of the World Cup was very different on tourism, with an increase of almost 2.4 million (p approximately 0). These results show that while South Africa effectively exploited the event to attract a significant amount of visitors, it saw a decrease in investment which could be due to potential economic stability worries.

London 2012 Olympics

The DiD GDP estimates suggest that hosting the 2012 London Olympics was associated with an estimated boost of 34 billion USD relative to the control group. However, this effect is not statistically significant (p=0.088), implying that the observed increase could be due to normal economic variation. As a result, there is no statistical evidence that the London Games caused a GDP rise.

The FDI results show no discernible impact from hosting the London 2012 Olympics. The projected treatment impact was +4.7 billion USD, however the result was not statistically significant with the p-value being 0.891. This shows that both the UK and the control group had consistent trends, and it could not be attributed solely to the event.

The results for the tourism showed no benefit of hosting the London 2012 Olympics. The projected effect was a decrease of around 530,000 arrivals, however this was also not statistically significant since the p-value was that of 0.589. The data suggest that foreign tourist inflows in the UK were mirrored with those of the control group rather than showing a surge related to the Olympics.

Brazil 2014 World Cup

The DiD results for GDP suggest a significant negative effect from hosting the 2014 World Cup. The treatment impact was assessed at a staggering -47 billion USD and was highly significant at the 1%

level (p approximately 0). This implies that Brazil's GDP during the tournament period was much lower than the counterfactual prediction, implying that the economic expenses and broader fiscal constrain hindered any possible gains.

The results for the foreign direct investment and tourism show that there were no statistically significant effects. For FDI, the estimated treatment was around the +3.2 billion USD mark with a p-value of 0.297, however, for the tourism the effect was less with only a small increase of 160,000 arrivals and a p-value of 0.782. These findings show that hosting the World Cup did not change neither of these variables significantly.

Russia 2018 World Cup

Russia's GDP saw an estimated loss of 8 billion USD relative to that of the control group. However, the effect is not statistically significant (p=0.228), implying that the reduction is indistinguishable from regular economic fluctuations. Overall, there is no statistical evidence that Russia's GDP was considerably impacted by hosting the event.

The DiD results for foreign direct investment show a significant negative impact of hosting the 2018 World Cup. The treatment impact was predicted to be a staggering -28 billion USD, with a highly significant result at the 1% level (p approximately 0). This shows that in the case of Russia, there was a substantial fall in FDI throughout the period of the event rather than drawing capital. This potentially indicates heightened geopolitical tensions as well as investor uncertainty.

Finally, the tourism results indicate a decrease of around 4.3 million arrivals during the World Cup. However, the impact is not statistically significant (p=0.097). While regular tourism flows were disrupted, there is insufficient information to conclude that the World Cup had a discernible impact on foreign arrivals.

The between, within, and overall R^2 values for the DiD models are shown in Table 2. While FDI has less explanatory power, the model fit for GDP is consistently good, with overall R^2 above 0.97 in most situations. The outcomes of tourism vary more widely with Russia 2018's model having a poor fit, while Beijing 2008 and Sydney 2000's models recording strong fits. All things considered, the models better represent GDP trends than the more volatile FDI and tourism flows.

Event	GDP (Between/Within/Overall)	FDI (Between/Within/Overall)	Tourism (Between/Within/Overall)
Sydney 2000 Olympic	0.9892 / 0.9784 / 0.9891	0.4767 / 0.1476 / 0.4007	0.9660 / 0.6532 / 0.9218
Beijing 2008 Olympic	0.9993 / 0.9992 / 0.9993	0.9411 / 0.8149 / 0.9121	0.9858 / 0.9368 / 0.9840
South Africa 2010 WC	0.9939 / 0.9894 / 0.9937	0.7069 / 0.3662 / 0.6117	0.9061 / 0.7185 / 0.8891
London 2012 Olympic	0.9767 / 0.8456 / 0.9760	0.7272 / 0.2355 / 0.4306	0.7084 / 0.3773 / 0.6866
Brazil 2014 WC	0.9973 / 0.9513 / 0.9965	0.8888 / 0.5474 / 0.8210	0.9470 / 0.2456 / 0.9335
Russia 2018 WC	0.9980 / 0.9551 / 0.9968	0.1498 / 0.3241 / 0.2117	0.4770 / 0.0393 / 0.4433

Table 2 - Between, Within, and Overall R^2 for DiD Models

The impacts of the six DiD case studies are diverse and highly context dependent. Some host countries experience statistically significant GDP gains (particularly during the Olympics), while others see substantial declines (notably in certain World Cups), and a few show little to no change. FDI responses are equally mixed: some cases register increases, others decline, and some are indistinguishable from the underlying trend. These outcomes reflect country-specific, time-varying conditions rather than any consistent pattern across hosts. Tourism effects also vary across hosts, mirroring the heterogeneity observed in FDI. Overall, the DiD results suggest that there is no uniform “mega-event payoff”; outcomes are shaped by host characteristics and timing. Table 3 summarizes these results across all six events, combining the estimated impacts on GDP, FDI and international tourism arrivals.

Event	GDP Impact (USD, bn)	FDI Impact (USD, bn)	Tourism Impact (arrivals)	Significance
Sydney 2000 Olympic	+7.0 ** (p=0.041)	-0.6 (ns)	-1.5m (ns)	GDP ↑
Beijing 2008 Olympic	+67.0 *** (p≈0.000)	+45.0 *** (p≈0.000)	-3.0 m *** (p≈0.000)	GDP, FDI ↑; Tourism ↓
South Africa 2010 WC	-5.8 *** (p≈0.000)	-0.9 ** (p=0.029)	+2.4m *** (p≈0.000)	GDP, FDI ↓; Tourism ↑
London 2012 Olympic	+34.0 (ns)	+4.7 (ns)	-0.53m (ns)	No clear effect
Brazil 2014 WC	-47.0 *** (p≈0.000)	+3.2 (ns)	+0.16m (ns)	GDP ↓
Russia 2018 WC	-8.0 (ns)	-28.0 *** (p≈0.000)	-4.3m (ns)	FDI ↓

Table 3 - Summary of DiD estimates

NB: *** - significant at the 1%

** - significant at the 5%

* - significant at the 10%

ns – non-significant

4.3 – Panel Regression Results

This section gives the results of a panel regression analysis that investigates if hosting mega sporting events influences a country's economic performance over time. The model incorporates three macroeconomic control variables: inflation, trade, and gross fixed capital formation, alongside four event-related variables. The first event variable is a binary indicator that equals 1 in the year of the event, capturing the immediate effect. To account for potential delayed impacts, two lagged dummies are included: one equals 1 in the year following an event, and the other equals 1 two years after. The fourth event-related variable is a cumulative measure of the total number of mega-events a country has hosted, designed to assess whether repeated hosting generates long-term effects. The model specification is a two-way fixed effects model having fixed effects for both countries and years. This controls for unobserved heterogeneity between nations as well as common global shocks. By doing so, the approach enhances the reliability of the estimated coefficients, reducing the risk that results are driven by country-specific factors or global macroeconomic volatility.

Table 4 reports the regression coefficients, standard errors, t-statistics, and p-values for the panel regression model which has moderate explanatory power. The within R^2 value is 0.0377, indicating that the specification only explains a very small portion of year-to-year GDP variance among nations. The model efficiently captures cross-country differences, as is indicated by the between R^2 of 0.7286. The overall R^2 of 0.4573 indicates a high cross sectional fit but limited time-series explanatory. This highlights the challenge of distinguishing the impact of mega-events from larger causes of national growth. Previous research has shown similar issues, with many finding that it is difficult to discern significant GDP effects of mega sporting events in aggregate data.

Variable	Coefficient	Std. Error	t-stat	p-value
Inflation	-0.1036	0.1066	-0.9716	0.3321
Trade (% of GDP)	0.0263	0.0177	1.4840	0.1389
Gross Fixed Capital Formation	0.0801	0.0459	1.7465	0.0818
Host_Event	-0.3655	0.9160	-0.3990	0.6902
Event_post_lag1	0.0793	1.3350	0.0594	0.9526
Event_post_lag2	0.4670	0.7408	0.6304	0.5289
Event_cumulative	-0.8059	0.4942	-1.6307	0.1040

Table 4 - Panel Regression Results

The control variables behaved largely in line with theoretical expectations, though statistical significance was limited (p-values: Inflation = 0.3321, Trade = 0.1389, Gross Fixed Capital Formation 0.0801). Inflation had a negative coefficient (-0.1036), suggesting that higher price levels may be associated with reduced output, while trade openness displayed a positive coefficient (0.0263) consistent with the idea that integration into global markets supports growth. Gross fixed capital formation also showed the expected positive relationship with GDP (coefficient 0.0801), and while only marginally significant at the 10% level, it points toward the conventional role of investment in driving economic activity.

Turning to the event-related variables, the coefficients for hosting a mega-event in the event year and in the first and second years afterward were small (coefficients: -0.3655, 0.0793, and 0.4670, respectively) and statistically insignificant (p-values: 0.690, 0.953, and 0.529, respectively), indicating no clear evidence of immediate or short-term GDP effects. This conclusion aligns with the majority of the literature, which consistently finds that the lasting effects of mega-events are difficult to empirically validate. The cumulative event variable, however, was negative (-0.8059) and nearly significant at the 10% threshold (p = 0.1040), hinting that repeated hosting may be associated with longer-term economic costs rather than benefits. This perspective is consistent with key contributions in the literature, such as those by Baade and Matheson (2016) and Zimbalist (2015), who highlight the financial burdens and the crowding out effects.

Overall, the results provide little support for the notion of a systematic GDP payoff from hosting mega-events. The findings support the consensus in most of the literature that positive pre-event expectations rarely lead to tangible national level economic improvements.

Diagnostic tests were performed to ensure the reliability of the results. The F-test for poolability examines whether all countries in the panel can be treated as having a common intercept, effectively testing if pooling the data without accounting for country-specific effects is appropriate. In our case, the F-statistic was 16.215 with a p-value approximately 0. This strongly rejects the null hypothesis of a common intercept, indicating that country-specific differences in baseline GDP are statistically significant. Consequently, including country-specific effects in the model is justified, as it accounts for unobserved heterogeneity across countries. Additionally, the model includes time fixed effects, which control for shocks or trends that affect all countries in a given year, such as global recessions or commodity price fluctuations. Together, these fixed effects ensure that the estimated coefficients, particularly for the event-related variables, capture within-country deviations from baseline GDP trends over time, isolating the effects of hosting mega-events from both country-specific characteristics and common temporal shocks.

The residual diagnostics indicate that the model's residuals deviate slightly from normality. The histogram shows a roughly bell-shaped distribution, but with somewhat heavier tails than a perfect normal curve, suggesting a few outliers or extreme values. The QQ plot reinforces this observation: while most points fall near the 45-degree reference line, the tails deviate, particularly at the upper end, indicating that the largest residuals are greater than what would be expected under a normal distribution. Combined with the Shapiro–Wilk test ($p < 0.001$), these results suggest that the residuals are not perfectly normally distributed. However, given the panel structure and the use of clustered standard errors, this deviation is unlikely to compromise the consistency of the estimated coefficients.

The Variance Inflation Factor (VIF) values indicate the degree of multicollinearity among the independent variables in a regression model. In our case, all variables have VIFs well below 5, ranging from 1.026 to 1.489, which suggests that multicollinearity is low and unlikely to distort the regression estimates. The constant term has a very high VIF of 24.879, but this is normal and typically ignored, as the intercept often shows high VIF values. Overall, these results indicate that the predictors are largely independent of each other, and the regression coefficients can be interpreted with confidence.

In estimating the model, heteroskedasticity and within-entity autocorrelation were accounted for by using cluster-robust standard errors at the entity level in the estimation. This approach allows for arbitrary heteroskedasticity across entities and correlation of residuals within entities over time, ensuring that the standard errors of the coefficients are robust.

The panel regression provides minimal evidence that hosting mega sporting events enhances national economic performance. The model does a good job of showing differences across countries (between $R^2 = 0.73$), but the same can not be said for the within-country explanatory power ($R^2 = 0.04$). The control variables acted essentially as expected, where trade and investment were positive but only somewhat important, whereas inflation was negative. Event-related factors, such as host-year and post-event delays, were not significant. The cumulative hosting measure, on the other hand, was negative and almost significant, suggesting that there are costs that will last for a long time. Diagnostic tests show that the model is strong. Overall, the results are consistent with previous studies which show that hosting does not usually lead to a big increase in GDP.

4.4 - Chapter Summary

The results of the panel regression model demonstrate the difficulties in determining consistent macroeconomic impacts from hosting. They also emphasise the need of using complementary methodologies, such as the event study, which investigates financial market movements, and the Difference-in-Differences framework, which provides counterfactual comparisons of growth paths. Taken together, these three approaches provide a more complete picture of the financial dynamics of these events, implying that their economic gains, if any, depend mostly on the context, is limited, and frequently overshadowed by costs in the long-term. The findings therefore align with much of the literature in suggesting that the case for hosting rests less on measurable economic returns and more on intangible or political factors, which remain difficult to quantify. The next chapter highlights the relevance of these findings for theory and policy within wider literature.

Chapter 5 – Discussion of Results, Conclusions and Recommendations

5.1 – Discussion of Results

The findings from the three models given in Chapter 4 paint a detailed picture of how mega sporting events impact host nations economies. Taken together, the findings indicate that, while events such as the Olympic Games and the FIFA World Cup draw worldwide attention which is frequently met with a short-term increase in activity, their long-term financial advantages are considerably less evident. This discussion interprets the empirical findings of the panel regression, short-term stock market event research, and Difference-in-Differences (DiD) analysis in light of the current literature, trying to identify common themes and areas of disparity.

5.1.1 - Stock Market Reactions (Event Study Results)

The event study in Chapter 4 showed that stock market reactions to mega-events are brief and rely on timing. As previously stated, Brazil 2014 outperformed, showing positive cumulative abnormal returns during both the announcement and event periods, whereas London 2012, Russia 2018 and Tokyo 2021 were on the opposite side, with negative or insignificant result. These mixed results demonstrates that markets tend to price in initial excitement but struggle to maintain momentum once the event is underway.

This trend is consistent with existing literature. Zawadzki (2013) discovered that equity markets frequently respond strongly to bid announcements but much less so during the event itself. Similarly, Mohamed et al. (2015) found that smaller economies had higher abnormal returns on announcement days, but larger economies had only slight fluctuations. Earlier research on Sydney 2000 found that when there were favourable benefits, these were restricted to certain sectors, such as construction, rather than the whole market (Berman et al. 2000).

Taken together, the data indicates that markets see mega-events as anticipated shocks. Investors respond to the news of hosting by pricing in factors such as construction contracts, tourism flows, and sponsorships revenues. However, by the time the event stars, these expectations have already been integrated, leaving little potential for general improvements. The stock market thus gives temporary sign of confidence rather than long-term proof of financial wealth development.

5.1.2 - Economic Outcomes (Difference-in-Differences Results)

The DiD research examined six hosts, each having control nations to determine the causal effects on GDP, FDI, and international ourism. The results revealed a highly unequal pattern. For example, Beijing 2008 saw a substantial GDP and FDI rise, but both South Africa 2010 and Brazil 2014 saw statistically significant losses. Both London 2012 and Russia 2018 had little to no quantifiable influence on all three outcome variables.

GDP impacts varied across situations and were frequently negative. These findings are consistent with those of Baade and Matheson (2004), who claimed that the 1994 World Cup in the United States incurred net expenses of up to $9.3 billion. Matheson (2006) went on to say that once substitution and crowding-out effects are addressed, aggregate GDP advantages are rare.

In contrast, tourism had a greater impact, particularly on Olympic hosts. The DiD went up in South Africa in 2010, as well as in Beijing in 2008. However, there was a small drop in arrivals in London 2012, which fits with the crowding out effects. These findings align with Vierhaus (2019), who identified that the Summer Olympics may yield significant long-term tourism benefits at the national level, enduring for up to 20 years, but the World Cup often offers just a temporary increase. Fourie and Santana-Gallego (2011) discovered that major events enhance tourism, albeit under certain conditions and often at the expense of everyday travellers.

The DiD also found no consistent FDI increase. While Beijing attracted considerable inflows in 2008, South Africa and Russia witnessed reductions. This aligns with Zimbalist (2015) who argues that claims of event-driven investment appeal are overstated, as investors ultimately prioritise fundamentals such as good governance and stable market conditions. Matheson (2012) adds that event uncertainty can inhibit investment in some cases.

Overall, the DiD results suggest that, while tourism can benefit, especially for Olympic hosts, the impact on GDP and FDI are minimal or negative. Thus, the causal evidence calls into question the positive narratives frequently promoted in bid campaigns.

5.1.3 – Long-Term Growth and Hosting Legacies (Panel Regression Results)

The panel regression in Chapter 4 examined whether hosting mega-events had a systematic effect on GDP growth, while adjusting for inflation, trade openness, and gross fixed capital formation. The findings revealed no significant effect in host years or in the near aftermath, and the cumulative-events variable was even slightly negative, indicating that recurrent hosting may have long-term costs rather than advantages.

This result aligns with Sterken (2006), who found that whereas the Summer Olympics may be associated with moderate per capita GDP growth, the World Cup did not yield significant enhancements. Brückner and Pappa (2015) found that most of the effects of hosting the Olympics happen before the event, and there is not much evidence that they last long after the event is over. Matheson (2006) explained why this outcome is common stating that ex-ante projections overstate net benefits by disregarding displacement and inflated multipliers.

The regression evidence contributes to this consensus. The lack of major short-or long-term consequences shows that mega-events are not growth drivers, but rather resource reallocators.

The modestly negative effect of recurrent hosting is consistent with Zimbalist's (2015) conclusion that the financial burden of regular bids and infrastructure improvements frequently surpasses the symbolic advantages.

5.1.4 – Cross-Model Synthesis

The three models tell a consistent story:

- The event analysis demonstrates that financial markets respond briefly to announcement then fade swiftly throughout the event, with Brazil 2014 being an exception.
- The DiD study reveals that tourism has occasional beneficial effects, notably for the Olympic Games, whereas GDP and FDI outcomes are small or negative.
- The panel regression reveals that there are no long-term growth effects, and that recurrent hosting may actually harm economic performance.

These results confirm a general consensus in the literature that mega-events are ineffective instruments for economic growth. They could bring in more tourists and attention for a short time, but they do not have much of an influence on the overall economy of the country. The longevity of optimistic pre-event estimates reflects political incentives and symbolic importance, not economic reality (Matheson, 2006; Baade and Matheson, 2016; Zimbalist, 2015

5.2 – Conclusions

The purpose of this thesis was to answer a major research question: Do mega sporting events generate meaningful and substantial financial economic benefits for host countries? The study gives a multidimensional picture of the financial dynamics surrounding the Olympic Games and the FIFA World Cup by utilising three complementary methodologies: an event analysis of stock markets, a Difference-in-Differences framework, and a panel regression of macroeconomic performance.

The findings from these approaches all point to the same conclusion: the economic justification for hosting mega-events is significantly less than sometimes suggested in bid documents or political statements. Stock market evidence reveals that financial markets respond to the news of hosting with short bursts of confidence, as seen in Brazil 2014 with some cases being less, but these reactions diminish once the events are underway. This suggest that markets see mega-events as information shocks rather than long-term value creators, consistent with previous research by Zawadzki (2013) and Mohamed et al. (2015).

The Difference-in-Differences analysis proved the lack of consistent macroeconomic benefits. While Beijing recorded significant GDP and FDI growth in 2008, South Africa in 2010 and Brazil in 2014 saw major decreases and cutbacks to GDP and investments respectively. The only fairly robust advantage was tourism, which grew in some contexts, most notably South Africa 2010, but

the data was varied, with events such as London 2012 demonstrating crowding-out impacts. Once again, such findings are consistent with those of Fourie and Santana-Gallego (2011) and Vierhaus (2019), who stress that Olympic advantages are more long-lasting than those of the World Cup.

The panel regression analysis reinforced these findings, indicating no substantial GDP effects in the host year or the subsequent two years. Even the cumulative hosting variable had a somewhat negative correlation with growth, suggesting that frequent hosting may negatively affect long-term performance rather than boost it. This aligns with the concerns of Sterken (2006), Matheson (2006), and Zimbalist (2015), who assert that the true economic effects of mega-events are often overstated.

In general, the research shows that mega-events may have symbolic and short-term benefits, but they are not a good way to boost the economy of a country. The data shows that the optimistic forecasts used to justify hosting do not line up with the far worse results that came out after the event. In reality, major events usually just move activity around instead of creating it. The benefits of hosting them, like attracting tourists or getting attention, are usually not worth the expenses to the host city.

Finally, this thesis adds to the literature by conducting a systematic, multi-method analysis of the impacts of mega-events on both financial markets and national economies. Its conclusions confirm the emerging agreement that the economic benefits of hosting are modest at best and overstated more often than not. The implication for policymakers is clear, the decision to host should be based on careful analysis of opportunity costs and the possibility of larger, non-economic legacies, rather than growth rewards.

5.3 – Recommendations

The conclusions of this thesis have significant impacts on policymakers and researchers. Although mega sporting events have worldwide exposure and symbolic significance, the empirical data demonstrates that they rarely produce the long-term economic rewards that are typically promised. As a result, potential approaches to mega event bidding, planning and analysis should take into account these facts.

5.3.1 - Policy Recommendations

First, governments should be more cautious when justifying bids on economic grounds. Chapter 4 proved that GDP and FDI benefits are minimal or even negative. Ex-ante impact studies, which often use inflated multipliers and overly positive projections, should be looked at with reservations. Policymakers need to think carefully about opportunity costs. They should realise that public money spent on stadiums and event infrastructure can be better spent on longer-term goals like education, healthcare, or transportation.

Second, while pursuing bids, integration with larger urban and national development objectives is essential. The example of Barcelona 1992, often seen as a good legacy case, prove that long-term advantages result not from the Games themselves, but from their inclusion in a comprehensive urban reconstruction strategy. Without such unity, events risk leaving behind underutilised "white elephants", as seen in South Africa 2010 and Brazil 2014.

Third, expectations must be managed transparently. When it comes to mega-events, the public sector often makes big claims about how much money they will make. A more honest presentation would focus on intangible benefits like pride and worldwide reputation and state that genuine economic benefits are not expected. This might make people talk more honestly about whether the symbolic rewards are worth the costs.

5.3.2 - Recommendations for Future Research

This thesis provides researchers with various areas to pursue. Future research should look at the geographical impact of mega-events, since aggregate national metrics may disguise advantages in certain areas or industries (such as hospitality or construction). Methodologically, different approaches, such as the synthetic control method might supplement panel and DiD models by giving more detailed counterfactual data. Finally, expanding the focus beyond GDP, FDI, and tourism to include wellbeing, social cohesion, and other environmental impacts will result in a more complete picture of mega event legacies.

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Appendix

Appendix A – Event Study

Date	Shanghai_Close	S&P_Close	Hang Seng_Close	Shangai Daily Return	S&P Daily Return	Hang Seng Daily Return	Global Benchmark Return	Abnormal Return on Shangai	Cumulative Abnormal Return (CAR)
02/07/2001	2,205.99	1,236.70							
03/07/2001	2,211.83	1,234.50	13,184.75	0.002647337	-0.001778928		-0.001778928	0.004426265	0.004426265
04/07/2001	2,202.06		13,207.53	-0.004417157		0.001727754	0.001727754	-0.00614491	-0.001718645
05/07/2001	2,181.66	1,219.20	12,999.48	-0.009264053		-0.015752378	-0.015752378	0.006488325	0.00476968
06/07/2001	2,170.52	1,190.60		-0.005106204	-0.023458005		-0.023458005	0.018351802	0.023121481
09/07/2001	2,169.66	1,198.80	12,690.68	-0.000396218	0.006887284		0.006887284	-0.007283502	0.015837979
10/07/2001	2,189.78	1,181.50	12,713.90	0.009273342	-0.014431098	0.001829689	-0.006300704	0.015574047	0.031412026
11/07/2001	2,168.74	1,180.20	12,527.90	-0.009608271	-0.001100296	-0.014629657	-0.007864977	-0.001743294	0.029668731
12/07/2001	2,165.49	1,208.10	12,660.20	-0.001498566	0.023640061	0.010560429	0.017100245	-0.018598811	0.01106992
13/07/2001	2,161.34	1,215.70	12,612.79	-0.001916425	0.00629087	-0.003744807	0.001273032	-0.003189457	0.007880463
16/07/2001	2,146.24	1,202.50	12,624.53	-0.006986407	-0.010857942	0.000930801	-0.00496357	-0.002022836	0.005857627
17/07/2001	2,140.98	1,214.40	12,495.25	-0.002450798	0.00989605	-0.010240381	-0.000172166	-0.002278632	0.003578995
18/07/2001	2,146.54	1,207.70	12,427.19	0.002596942	-0.005517128	-0.00544687	-0.005481999	0.00807894	0.011657936
19/07/2001	2,150.26	1,215.00	12,279.82	0.001733022	0.006044547	-0.011858674	-0.002907063	0.004640085	0.016298021
20/07/2001	2,179.62	1,210.80	12,301.68	0.013654163	-0.00345679	0.001780156	-0.000838317	0.01449248	0.0307905
23/07/2001	2,169.01	1,191.00	12,236.45	-0.004867821	-0.016352825	-0.005302528	-0.010827676	0.005959855	0.036750355

Figure A 1 - CAR: Beijing 2008 Olympics Announcement Window

Date	Shangai_Close	S&P_Close	Hang Seng_Close	Shangai Daily Return	S&P Daily Return	Hang Seng Daily Return	Global Benchmark Return	Abnormal Return on Shangai	Cumulative Abnormal Return (CAR)
25/07/2008	2,865.10	1,257.80	22,740.71						
28/07/2008	2,903.01	1,234.40	22,687.21	0.01323165	-0.018603912	-0.002352609	-0.01047826	0.02370991	0.02370991
29/07/2008	2,850.31	1,263.20	22,258.00	-0.018153572	0.023331173	-0.018918589	0.002206292	-0.020359864	0.003350046
30/07/2008	2,836.67	1,284.30	22,690.60	-0.004785444	0.01670361	0.019435709	0.018069659	-0.022855104	-0.019505057
31/07/2008	2,775.72	1,267.40	22,731.10	-0.021486461	-0.013158919	0.00178488	-0.00568702	-0.015799442	-0.035304499
01/08/2008	2,801.82	1,260.30	22,862.60	0.009402966	-0.00560202	0.005785026	9.1503E-05	0.009311463	-0.025993036
04/08/2008	2,741.74	1,249.00	22,514.92	-0.021443205	-0.008966119	-0.015207369	-0.012086744	-0.009356461	-0.035349497
05/08/2008	2,690.75	1,284.90	21,949.75	-0.018597679	0.028742994	-0.025102021	0.001820487	-0.020418165	-0.055767662
06/08/2008	2,719.37	1,289.20		0.01063644	0.003346564		0.003346564	0.007289876	-0.048477786
07/08/2008	2,727.58	1,266.10	22,104.20	0.003019082	-0.017918089		-0.017918089	0.02093717	-0.027540616
08/08/2008	2,605.72	1,296.30	21,885.21	-0.044676966	0.023852776	-0.009907167	0.006972805	-0.051649771	-0.079190387
11/08/2008	2,470.07	1,305.30	21,859.34	-0.052058548	0.006942837	-0.001182077	0.00288038	-0.054938928	-0.134129315
12/08/2008	2,457.20	1,289.60	21,640.89	-0.005210379	-0.012027886	-0.00999344	-0.011010663	0.005800284	-0.128329031
13/08/2008	2,446.30	1,285.80	21,293.32	-0.004435943	-0.00294665	-0.0160608	-0.009503725	0.005067782	-0.123261249
14/08/2008	2,437.08	1,292.90	21,392.71	-0.003768957	0.005521854	0.004667661	0.005094758	-0.008863715	-0.132124964
15/08/2008	2,450.61	1,298.20	21,160.58	0.005551726	0.004099312	-0.010850893	-0.003375791	0.008927516	-0.123197448
18/08/2008	2,319.87	1,278.60	20,930.67	-0.053349982	-0.015097828	-0.010865014	-0.012981421	-0.040368561	-0.163566009
19/08/2008	2,344.47	1,266.70	20,484.37	0.010604042	-0.009307055	-0.021322777	-0.015314916	0.025918958	-0.137647051
20/08/2008	2,523.28	1,274.50	20,931.26	0.076268837	0.006157733	0.021816146	0.013986939	0.062281898	-0.075365153
21/08/2008	2,431.72	1,277.70	20,392.06	-0.036286104	0.002510789	-0.025760513	-0.011624862	-0.024661241	-0.100026395
22/08/2008	2,405.23	1,292.20	20,392.06	-0.010893524	0.011348517	0	0.005674258	-0.016567782	-0.116594177
25/08/2008	2,413.37	1,266.80	21,104.79	0.003384292	-0.0196564	0.034951349	0.007647474	-0.004263183	-0.12085736

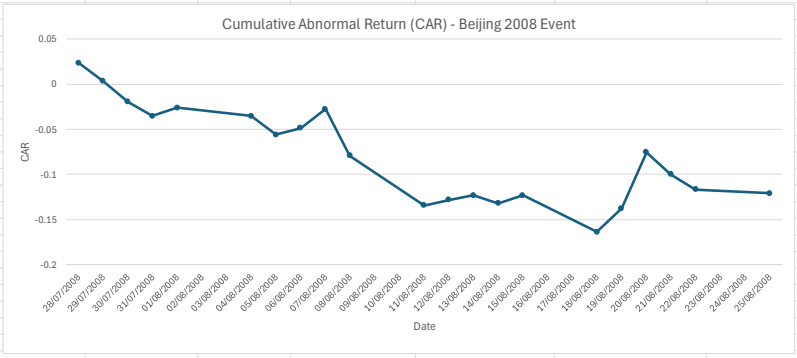

Figure A 2 - CAR: Beijing 2008 Olympics Event Window

Date	JTOPI_Close	S&P_Close	FTSE 100_Close	JTOPI Daily Return	S&P Daily Return	FTSE 100 Daily Return	Global Benchmark Return	Abnormal Return on JTOPI	Cumulative Abnormal Return (CAR)
07/05/2004	9,479.11	1,095.50	4,498.40						
10/05/2004	9,138.82	1,083.50	4,395.20	-0.03589894	-0.010953902	-0.02294149	-0.016947696	-0.018951244	-0.018951244
11/05/2004	9,206.98	1,092.25	4,454.70	0.007458293	0.008075681	0.013537495	0.010806588	-0.003348295	-0.022299538
12/05/2004	9,086.31	1,098.75	4,412.90	-0.013106361	0.005951019	-0.009383348	-0.001716165	-0.011390196	-0.033689734
13/05/2004	9,106.30	1,093.75	4,453.80	0.002200013	-0.004550626	0.009268282	0.002358828	-0.000158815	-0.033848549
14/05/2004	8,841.38	1,094.75	4,441.80	-0.029091947	0.000914286	-0.002694328	-0.000890021	-0.028201926	-0.062050475
17/05/2004	8,894.19	1,085.50	4,403.00	0.005973049	-0.008449418	-0.008735197	-0.008592308	0.014565357	-0.047485118
18/05/2004	8,841.75	1,090.25	4,414.40	-0.005895984	0.004375864	0.002589144	0.003482504	-0.009378487	-0.056863606
19/05/2004	9,192.98	1,086.75	4,471.80	0.039724037	-0.003210273	0.0130029	0.004896313	0.034827723	-0.022035882
20/05/2004	9,152.57	1,090.50	4,428.70	-0.004395745	0.003450656	-0.009638177	-0.003093761	-0.001301985	-0.023337867
21/05/2004	9,261.95	1,092.50	4,431.40	0.011950742	0.001834021	0.00060966	0.00122184	0.010728901	-0.012608966
24/05/2004	9,090.01	1,096.50	4,428.90	-0.018564125	0.003661327	-0.000564156	0.001548586	-0.020112711	-0.032721677
25/05/2004	9,156.01	1,112.50	4,418.00	0.007260718	0.014591883	-0.002461108	0.006065388	0.00119533	-0.031526347

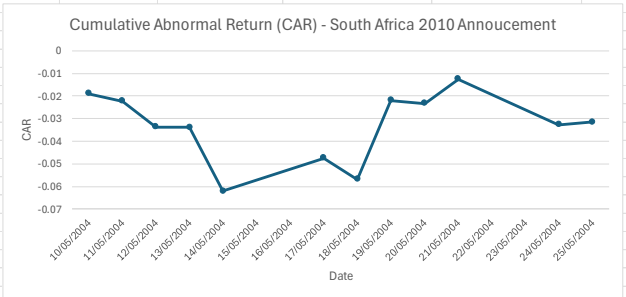

Figure A 3 - CAR: South Africa 2010 World Cup Announcement Window

Date	JTOPI_Close	S&P_Close	FTSE 100_Close	JTOPI Daily Return	S&P Daily Return	FTSE 100 Daily Return	Global Benchmark Return	Abnormal Return on JTOPI	Cumulative Abnormal Return (CAR)
03/06/2010	24,172.47	1,103.50	5,211.20						
04/06/2010	23,604.51	1,066.00	5,126.00	-0.023496151	-0.033982782	-0.016349401	-0.025166092	0.001669941	0.001669941
07/06/2010	23,263.12	1,048.00	5,069.10	-0.014462914	-0.016885553	-0.011100273	-0.013992913	-0.000470001	0.00119994
08/06/2010	23,093.24	1,059.25	5,028.10	-0.007302546	0.010734733	-0.008088221	0.001323256	-0.008625802	-0.007425862
09/06/2010	23,718.85	1,055.50	5,085.90	0.027090612	-0.003540241	0.011495396	0.003977578	0.023113034	0.015687172
10/06/2010	24,190.67	1,083.75	5,132.50	0.019892195	0.026764567	0.009162587	0.017963577	0.001928619	0.017615791
11/06/2010	23,888.31	1,089.25	5,163.70	-0.012499034	0.005074971	0.006078909	0.00557694	-0.018075974	-0.000460182
14/06/2010	24,499.27	1,090.50	5,202.10	0.02557569	0.001147579	0.007436528	0.004292053	0.021283636	0.020823454
15/06/2010	24,715.03	1,113.50	5,217.80	0.008806793	0.021091243	0.003018012	0.012054627	-0.003247834	0.017575619
16/06/2010		1,114.00	5,237.90		0.000449035	0.003852198	0.002150616		0.017575619
17/06/2010	24,812.68	1,116.25	5,253.90		0.002019749	0.003054659	0.002537204		0.017575619
18/06/2010	24,754.90	1,118.83	5,250.80	-0.002328648	0.00231131	-0.000590038	0.000860636	-0.003189284	0.014386335
21/06/2010	25,032.06	1,110.50	5,299.10	0.011196167	-0.007445278	0.009198598	0.00087666	0.010319507	0.024705842

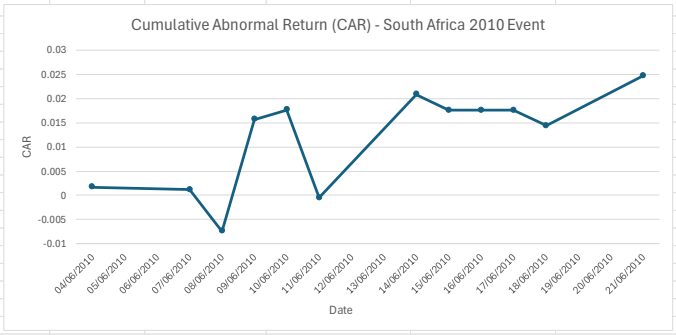

Figure A 4 – CAR: South Africa 2010 World Cup Event Window

Date	FTSE_Close	S&P_Close	CAC40_Close	FTSE Daily Return	S&P Daily Return	CAC Daily Return	Global Benchmark Return	Abnormal Return on FTSE	Cumulative Abnormal Return (CAR)
15/06/2005	5,019.50	1,206.50	4,184.36						
16/06/2005	5,045.00	1,210.50	4,185.15	0.005080187	0.003315375	0.000188798	0.001752087	0.003328101	0.003328101
17/06/2005	5,077.60	1,222.68	4,220.91	0.006461843	0.010061958	0.008544497	0.009303227	-0.002841384	0.000486717
20/06/2005	5,072.00	1,220.00	4,193.40	-0.001102883	-0.002191906	-0.006517552	-0.004354729	0.003251846	0.003738563
21/06/2005	5,082.10	1,221.00	4,222.02	0.001991325	0.000819672	0.006825011	0.003822341	-0.001831017	0.001907546
22/06/2005	5,099.30	1,221.00	4,229.55	0.003384428	0	0.001783506	0.000891753	0.002492674	0.004400221
23/06/2005	5,114.40	1,204.00	4,240.18	0.002961191	-0.013923014	0.00251327	-0.005704872	0.008666063	0.013066283
24/06/2005	5,079.00	1,195.75	4,199.87	-0.006921633	-0.006852159	-0.009506672	-0.008179416	0.001257783	0.014324066
27/06/2005	5,043.50	1,196.25	4,157.68	-0.006989565	0.000418148	-0.010045549	-0.004813701	-0.002175864	0.012148202
28/06/2005	5,090.40	1,206.75	4,194.33	0.009299098	0.008777429	0.008815012	0.008796221	0.000502877	0.012651079
29/06/2005	5,109.10	1,203.00	4,231.88	0.003673582	-0.00310752	0.008952562	0.002922521	0.000751061	0.01340214
30/06/2005	5,113.20	1,195.50	4,229.35	0.00080249	-0.006234414	-0.000597843	-0.003416129	0.004218618	0.017620758
01/07/2005	5,161.00	1,200.00	4,269.62	0.009348353	0.003764115	0.009521558	0.006642837	0.002705517	0.020326274
04/07/2005	5,184.30		4,264.60	0.004514629		-0.001175749	-0.001175749	0.005690378	0.026016652
05/07/2005	5,190.10	1,209.00	4,252.75	0.001118762		-0.00277869	-0.00277869	0.003897452	0.029914104
06/07/2005	5,229.60	1,198.50	4,279.95	0.007610643	-0.008684864	0.006395862	-0.001144501	0.008755144	0.038669249
07/07/2005	5,158.30	1,202.75	4,220.62	-0.01363393	0.003546099	-0.013862311	-0.005158106	-0.008475824	0.030193425
08/07/2005	5,232.20	1,216.50	4,300.31	0.014326425	0.011432135	0.018881112	0.015156623	-0.000830198	0.029363227
11/07/2005	5,242.40	1,223.50	4,321.56	0.001949467	0.005754213	0.004941504	0.005347859	-0.003398392	0.025964835
12/07/2005	5,217.20	1,225.50	4,313.78	-0.004806959	0.001634655	-0.001800276	-8.28106E-05	-0.004724148	0.021240687
13/07/2005	5,245.90	1,228.00	4,343.62	0.005501035	0.002039984	0.006917367	0.004478675	0.00102236	0.022263046
14/07/2005	5,259.70	1,231.75	4,370.88	0.002630626	0.003053746	0.006275871	0.004664809	-0.002034183	0.020228864
15/07/2005	5,230.80	1,231.25	4,373.77	-0.00549461	-0.000405927	0.000661194	0.000127634	-0.005622244	0.01460662
18/07/2005	5,214.20	1,226.50	4,363.47	-0.003173511	-0.003857868	-0.002354948	-0.003106408	-6.71028E-05	0.014539517
19/07/2005	5,201.50	1,233.25	4,424.25	-0.002435656	0.005503465	0.013929281	0.009716373	-0.01215203	0.002387487
20/07/2005	5,215.20	1,236.50	4,418.39	0.002633856	0.002635313	-0.001324518	0.000655397	0.001978458	0.004365946

Figure A 5 -CAR: London 2012 Olympics Announcement Window

Date	FTSE_Close	S&P_Close	CAC40_Close	FTSE Daily Return	S&P Daily Return	CAC Daily Return	Global Benchmark Return	Abnormal Return on FTSE	Cumulative Abnormal Returns (CAR)
02/07/2012	5,640.64	1,357.50	3,240.20						
03/07/2012	5,687.73	1,368.00	3,271.20	0.008348343	0.007734807	0.009567311	0.008651059	-0.000302715	-0.000302715
04/07/2012	5,684.47		3,267.75	-0.000573164		-0.001054659	-0.001054659	0.000481495	0.00017878
05/07/2012	5,692.63	1,361.50	3,229.36	0.00143549		-0.011748145	-0.011748145	0.013183635	0.013362415
06/07/2012	5,662.63	1,351.75	3,168.79	-0.005269972	-0.007161219	-0.018756038	-0.012958629	0.007688657	0.021051072
09/07/2012	5,627.33	1,349.25	3,156.80	-0.006233852	-0.001849454	-0.003783779	-0.002816617	-0.003417236	0.017633836
10/07/2012	5,664.07	1,335.50	3,175.41	0.006528851	-0.010190847	0.00589521	-0.002147818	0.008676669	0.026310505
11/07/2012	5,664.48	1,336.25	3,157.25	7.23861E-05	0.000561587	-0.005718947	-0.00257868	0.002651066	0.028961571
12/07/2012	5,608.25	1,329.25	3,135.18	-0.009926772	-0.005238541	-0.006990261	-0.006114401	-0.003812371	0.0251492
13/07/2012	5,666.13	1,351.75	3,180.81	0.01032051	0.016926838	0.014554188	0.015740513	-0.005420003	0.019729196
16/07/2012	5,662.43	1,347.50	3,179.90	-0.000653003	-0.003144072	-0.000286091	-0.001715082	0.001062079	0.020791275
17/07/2012	5,629.09	1,358.50	3,176.97	-0.005887932	0.008163265	-0.000921413	0.003620926	-0.009508858	0.011282417
18/07/2012	5,685.77	1,367.25	3,235.40	0.010069123	0.006440927	0.018391738	0.012416333	-0.00234721	0.008935207
19/07/2012	5,714.19	1,372.00	3,263.64	0.004998443	0.003474127	0.008728442	0.006101284	-0.001102841	0.007832367
20/07/2012	5,651.77	1,358.25	3,193.89	-0.010923683	-0.010021866	-0.021371842	-0.015696854	0.004773171	0.012605538
23/07/2012	5,533.87	1,343.75	3,101.53	-0.020860722	-0.010675502	-0.028917715	-0.019796608	-0.001064113	0.011541424
24/07/2012	5,499.23	1,329.50	3,074.68	-0.006259634	-0.010604651	-0.008657018	-0.009630834	0.003371201	0.014912625
25/07/2012	5,498.32	1,335.00	3,081.74	-0.000165478	0.004136894	0.002296174	0.003216534	-0.003382011	0.011530613
26/07/2012	5,573.16	1,354.75	3,207.12	0.01361143	0.014794007	0.040684808	0.027739408	-0.014127977	-0.002597364
27/07/2012	5,627.21	1,382.50	3,280.19	0.009698268	0.020483484	0.022783681	0.021633583	-0.011935315	-0.014532678
30/07/2012	5,693.63	1,380.50	3,320.71	0.011803363	-0.001446655	0.012352943	0.005453144	0.006350218	-0.00818246
31/07/2012	5,635.28	1,374.50	3,291.66	-0.010248295	-0.004346251	-0.008748129	-0.00654719	-0.003701105	-0.011883565
01/08/2012	5,712.82	1,370.50	3,321.56	0.013759742	-0.002910149	0.009083563	0.003086707	0.010673035	-0.001210529
02/08/2012	5,662.30	1,362.00	3,232.46	-0.008843268	-0.006202116	-0.026824745	-0.016513431	0.007670162	0.006459633
03/08/2012	5,787.28	1,389.00	3,374.19	0.022072303	0.019823789	0.043845864	0.031834826	-0.009762523	-0.00330289
06/08/2012	5,808.77	1,390.00	3,401.56	0.003713316	0.000719942	0.008111576	0.004415759	-0.000702443	-0.004005334
07/08/2012	5,841.24	1,397.00	3,453.28	0.005589824	0.005035971	0.015204788	0.01012038	-0.004530556	-0.00853589
08/08/2012	5,845.92	1,398.25	3,438.26	0.0008012	0.000894775	-0.004349488	-0.001727357	0.002528556	-0.006007333
09/08/2012	5,851.51	1,400.50	3,456.71	0.000956222	0.001609154	0.005366086	0.00348762	-0.002531398	-0.008538731
10/08/2012	5,847.11	1,402.50	3,435.62	-0.000751943	0.001428061	-0.006101177	-0.002336558	0.001584615	-0.006954116
13/08/2012	5,831.88	1,402.50	3,426.41	-0.002604706	0	-0.002680739	-0.001340369	-0.001264336	-0.008218452
14/08/2012	5,864.78	1,401.50	3,450.27	0.005641406	-0.000713012	0.006963557	0.003125272	0.002516133	-0.005702319
15/08/2012	5,833.04	1,403.50	3,449.20	-0.005411968	0.001427042	-0.000310121	0.000558461	-0.005970429	-0.011672747

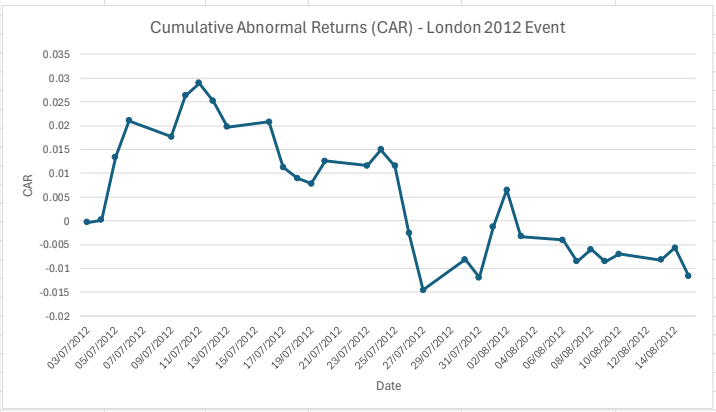

Figure A 6 - CAR: London 2012 Olympics Event Window

Date	Bovespa_Close	S&P_Close	FTSE 100_Close	Bovespa Daily Return	S&P Daily Return	FTSE 100 Daily Return	Global Benchmark Return	Abnormal Return on Bovespa	Cumulative Abnormal Return (CAR)
23/10/2007	62,697	1,519.60	6,514.00						
24/10/2007	62,625	1,515.90	6,482.00	-0.00114838	-0.002434851	-0.004912496	-0.003673674	0.002525293	0.002525293
25/10/2007	62,341	1,514.40	6,576.30	-0.00453493	-0.000989511	0.014547979	0.006779234	-0.011314164	-0.008788871
26/10/2007	64,276	1,535.30	6,661.30	0.031038963	0.013800845	0.012925201	0.013363023	0.01767594	0.008887069
29/10/2007	65,044	1,541.00	6,706.00	0.011948472	0.003712629	0.006710402	0.005211516	0.006736957	0.015624026
30/10/2007	64,383	1,531.00	6,659.00	-0.010162352	-0.006489293	-0.007008649	-0.006748971	-0.003413381	0.012210645
31/10/2007	65,318	1,549.40	6,721.60	0.014522467	0.012018289	0.009400811	0.01070955	0.003812917	0.016023562
01/11/2007	64,050	1,508.40	6,586.10	-0.019412719	-0.026461856	-0.020158891	-0.023310373	0.003897654	0.019921217
02/11/2007		1,509.70	6,530.60		0.00086184	-0.008426838	-0.003782499		0.019921217
05/11/2007	62,960	1,502.20	6,461.40		-0.004967874	-0.01059627	-0.007782072		0.019921217
06/11/2007	64,503	1,520.30	6,474.90	0.024507624	0.012048995	0.00208933	0.007069163	0.017438461	0.037359678
07/11/2007	63,501	1,475.60	6,385.10	-0.015534161	-0.029402092	-0.01386894	-0.021635516	0.006101355	0.043461032
08/11/2007	63,562	1,474.80	6,381.90	0.000960615	-0.000542152	-0.000501167	-0.00052166	0.001482274	0.044943307
09/11/2007	64,321	1,453.70	6,304.90	0.01941097	-0.014307025	-0.012065372	-0.013186199	0.025127295	0.070070602

Figure A 7 - CAR: Brazil 2014 World Cup Announcement Window

Date	Bovespa_Close	S&P_Close	FTSE 100_Close	Bovespa Daily Return	S&P Daily Return	FTSE 100 Daily Return	Global Benchmark Return	Abnormal Return on Bovespa	Cumulative Abnormal Return (CAR)
05/06/2014	51,559	1,940.50	6,813.49						
06/06/2014	53,129	1,949.40	6,858.21	0.030450552	0.004586447	0.00656345	0.005574948	0.024875603	0.024875603
09/06/2014	54,273	1,951.30	6,875.00	0.021532496	0.000974659	0.002448161	0.00171141	0.019821087	0.04469669
10/06/2014	54,604	1,950.80	6,873.55	0.006098797	-0.000256239	-0.000210909	-0.000233574	0.006332371	0.051029061
11/06/2014	55,102	1,943.90	6,838.87	0.009120211	-0.00353701	-0.005045428	-0.004291219	0.01341143	0.064440491
12/06/2014		1,930.10	6,843.11		-0.007099131	0.000619985	-0.003239573		0.064440491
13/06/2014	54,807	1,936.20	6,777.85		0.003160458	-0.0095366	-0.003188071		0.064440491
16/06/2014	54,630	1,937.80	6,754.64	-0.003229514	0.000826361	-0.00342439	-0.001299014	-0.0019305	0.062509991
17/06/2014	54,300	1,942.00	6,766.77	-0.006040637	0.002167406	0.001795803	0.001981604	-0.008022241	0.05448775
18/06/2014	55,203	1,957.00	6,778.56	0.016629834	0.007723996	0.001742338	0.004733167	0.011896667	0.066384417
19/06/2014		1,959.50	6,808.11		0.001277466	0.004359333	0.002818399		0.066384417
20/06/2014	54,638	1,962.90	6,825.20		0.001735137	0.002510241	0.002122689		0.066384417
23/06/2014	54,210	1,962.60	6,800.56	-0.007833376	-0.000152835	-0.003610151	-0.001881493	-0.005951883	0.060432534

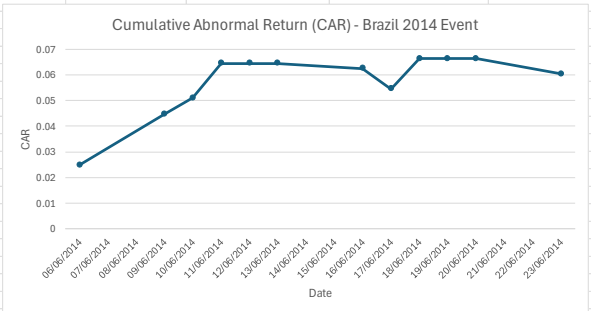

Figure A 8 - CAR: Brazil 2014 World Cup Event Window

Date	MOEX_Close	S&P_Close	FTSE 100_Close	MOEX Daily Return	S&P Daily Return	FTSE 100 Daily Return	Global Benchmark Return	Abnormal Return on MOEX	Cumulative Abnormal Return (CAR)
25/11/2010	1,571.31		5,698.93						
26/11/2010	1,566.41	1,183.25	5,668.70	-0.003118417		-0.005304505	-0.005304505	0.002186087	0.002186087
29/11/2010	1,554.65	1,186.50	5,569.73	-0.007507613	0.002746672	-0.017459029	-0.007356179	-0.000151434	0.002034653
30/11/2010	1,565.52	1,179.50	5,528.27	0.006991927	-0.005899705	-0.007443808	-0.006671756	0.013663684	0.015698337
01/12/2010	1,601.76	1,204.50	5,642.50	0.023148858	0.021195422	0.020662884	0.020929153	0.002219705	0.017918042
02/12/2010	1,632.37	1,222.75	5,767.56	0.019110229	0.015151515	0.022163934	0.018657725	0.000452504	0.018370546
03/12/2010	1,649.56	1,223.50	5,756.66	0.010530701	0.000613371	-0.001889881	-0.000638255	0.011168955	0.029539501
06/12/2010	1,672.57	1,222.00	5,770.28	0.013949174	-0.001225991	0.002365955	0.000569982	0.013379192	0.042918694
07/12/2010	1,676.41	1,223.25	5,808.45	0.002295868	0.001022913	0.00661493	0.003818922	-0.001523054	0.04139564
08/12/2010	1,650.08	1,228.75	5,794.53	-0.015706182	0.004496219	-0.002396509	0.001049855	-0.016756037	0.024639603
09/12/2010	1,660.62	1,233.00	5,807.96	0.006387569	0.0034588	0.002317703	0.002888251	0.003499318	0.028138921
10/12/2010	1,656.34	1,241.00	5,812.95	-0.002577351	0.00648824	0.000859166	0.003673703	-0.006251054	0.021887867
13/12/2010	1,662.45	1,241.25	5,860.75	0.003688856	0.00020145	0.008223019	0.004212235	-0.000523379	0.021364488

Figure A 9 - CAR: Russia 2018 World Cup Announcement Window

Date	MOEX_Close	S&P_Close	FTSE 100_Close	MOEX Daily Return	S&P Daily Return	FTSE 100 Daily Return	Global Benchmark Return	Abnormal Return on MOEX	Cumulative Abnormal Return (CAR)
07/06/2018	2,316.07	2,772.25	7,704.40						
08/06/2018	2,267.92	2,778.75	7,681.07	-0.020789527	0.002344666	-0.00302814	-0.000341737	-0.02044779	-0.02044779
11/06/2018	2,271.74	2,783.00	7,737.43	0.001684363	0.001529465	0.007337519	0.004433492	-0.002749129	-0.023196919
12/06/2018		2,784.00	7,703.81		0.000359324	-0.004345112	-0.001992894		-0.023196919
13/06/2018	2,270.73	2,774.25	7,703.71		-0.003502155	-1.29806E-05	-0.001757568		-0.023196919
14/06/2018	2,253.48	2,783.25	7,765.79	-0.007596676	0.00324412	0.008058455	0.005651287	-0.013247963	-0.036444883
15/06/2018	2,237.53	2,776.85	7,633.91	-0.007077942	-0.00229947	-0.016982174	-0.009640822	0.002562881	-0.033882002
18/06/2018	2,222.56	2,779.75	7,631.33	-0.006690413	0.001044349	-0.000337966	0.000353192	-0.007043605	-0.040925607
19/06/2018	2,221.42	2,766.25	7,603.85	-0.000512922	-0.004856552	-0.003600945	-0.004228748	0.003715826	-0.037209781
20/06/2018	2,256.27	2,772.00	7,627.40	0.015688163	0.002078626	0.003097115	0.002587871	0.013100293	-0.024109488
21/06/2018	2,245.94	2,752.50	7,556.44	-0.004578353	-0.007034632	-0.009303301	-0.008168967	0.003590614	-0.020518874
22/06/2018	2,249.68	2,759.50	7,682.27	0.001665227	0.002543143	0.016652021	0.009597582	-0.007932355	-0.028451229
25/06/2018	2,236.65	2,722.25	7,509.84	-0.005791935	-0.013498822	-0.022445189	-0.017972005	0.012180071	-0.016271158

Figure A 10 - CAR: Russia 2018 World Cup Event Window

Date	Nikkei_Close	S&P_Close	Hang Seng_Close	Nikkei Daily Return	S&P Daily Return	Hang Seng Daily Return	Global Benchmark Return	Abnormal Return on Nikkei	Cumulative Abnormal Return (CAR)
30/08/2013	13,388.86	1,633.00	21,731.37						
02/09/2013	13,572.92		22,175.34	0.01374725		0.020429913	0.020429913	-0.006682663	-0.006682663
03/09/2013	13,978.44	1,639.80	22,394.58	0.029877138		0.009886658	0.009886658	0.01999048	0.013307816
04/09/2013	14,053.87	1,653.10	22,326.22	0.005396167	0.008110745	-0.003052524	0.00252911	0.002867057	0.016174873
05/09/2013	14,064.82	1,655.10	22,597.97	0.000779145	0.001209848	0.012171787	0.006690818	-0.005911673	0.0102632
06/09/2013	13,860.81	1,655.20	22,621.22	-0.014504985	6.04193E-05	0.001028853	0.000544636	-0.015049621	-0.004786421
09/09/2013	14,205.23	1,671.70	22,750.65	0.024848476	0.009968584	0.005721619	0.007845101	0.017003374	0.012216953
10/09/2013	14,423.36	1,684.00	22,976.65	0.015355612	0.00735778	0.009933782	0.008645781	0.006709831	0.018926785
11/09/2013	14,425.07	1,689.10	22,937.14	0.000118558	0.003028504	-0.001719572	0.000654466	-0.000535908	0.018390876
12/09/2013	14,387.27	1,683.40	22,953.72	-0.002620438	-0.003374578	0.000722845	-0.001325867	-0.001294571	0.017096305
13/09/2013	14,404.67	1,688.00	22,915.28	0.001209402	0.002732565	-0.001674674	0.000528945	0.000680457	0.017776762
16/09/2013		1,697.60	23,252.41		0.005687204	0.014712017	0.010199611		0.017776762
17/09/2013	14,311.67	1,704.80	23,180.52		0.004241282	-0.003091723	0.00057478		0.017776762

Figure A 11 - CAR: Tokyo 2021 Olympics Announcement Window

Date	Nikkei_Close	S&P_Close	Hang Seng_Close	Nikkei Daily Return	S&P Daily Return	Hang Seng Daily Return	Global Benchmark Return	Abnormal Return on Nikkei	Cumulative Abnormal Return (CAR)
16/07/2021	28,003.08	4,327.20	28,004.68						
19/07/2021	27,652.74	4,258.50	27,489.78	-0.012510767	-0.015876317	-0.018386213	-0.017131265	0.004620498	0.004620498
20/07/2021	27,388.16	4,323.10	27,259.25	-0.009567949	0.015169661	-0.008386026	0.003391818	-0.012959766	-0.008339268
21/07/2021	27,548.00	4,358.70	27,224.58	0.005836099	0.008234831	-0.001271862	0.003481485	0.002354614	-0.005984654
22/07/2021		4,367.50	27,723.84		0.002018951	0.018338575	0.010178763		-0.005984654
23/07/2021		4,411.80	27,321.98		0.010143102	-0.014495106	-0.002176002		-0.005984654
26/07/2021	27,833.29	4,422.30	26,192.32		0.002379981	-0.041346198	-0.019483109		-0.005984654
27/07/2021	27,970.22	4,401.50	25,086.43	0.004919648	-0.004703435	-0.042221918	-0.023462677	0.028382325	0.022397671
28/07/2021	27,581.66	4,400.60	25,473.88	-0.013891918	-0.000204476	0.015444605	0.007620065	-0.021511982	0.000885688
29/07/2021	27,782.42	4,419.10	26,315.32	0.00727875	0.004203972	0.033031482	0.018617727	-0.011338977	-0.010453289
30/07/2021	27,283.59	4,395.30	25,961.03	-0.017954879	-0.005385712	-0.01346326	-0.009424486	-0.008530393	-0.018983682
02/08/2021	27,781.02	4,387.20	26,235.80	0.018231838	-0.001842878	0.010583941	0.004370532	0.013861307	-0.005122376
03/08/2021	27,641.83	4,423.10	26,194.82	-0.005010255	0.008182896	-0.001561988	0.003310454	-0.008320709	-0.013443085
04/08/2021	27,584.08	4,402.70	26,426.55	-0.002089225	-0.00461215	0.008846406	0.002117128	-0.004206353	-0.017649437
05/08/2021	27,728.12	4,429.10	26,204.69	0.005221853	0.00599632	-0.008395345	-0.001199512	0.006421365	-0.011228073

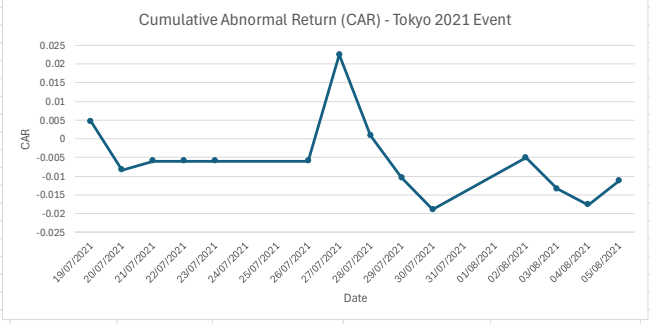

Figure A 12 - CAR: Tokyo 2021 Olympics Event Window

Appendix B – Difference-in-Differences

PanelOLS Estimation Summary

Dep. Variable:	GDP	R-squared:	0.9787
Estimator:	PanelOLS	R-squared (Between):	0.9892
No. Observations:	105	R-squared (Within):	0.9784
Date:	Tue, Aug 19 2025	R-squared (Overall):	0.9891
Time:	13:44:48	Log-likelihood	-2778.2
Cov. Estimator:	Clustered		
		F-statistic:	1884.2
Entities:	7	P-value	0.0000
Avg Obs:	15.000	Distribution:	F(2,82)
Min Obs:	15.000		
Max Obs:	15.000	F-statistic (robust):	3.326e+05
		P-value	0.0000
Time periods:	15	Distribution:	F(2,82)
Avg Obs:	7.0000		
Min Obs:	7.0000		
Max Obs:	7.0000		

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
GDP_lag1	0.9179	0.0012	782.91	0.0000	0.9155	0.9202
DID	6.999e+09	3.377e+09	2.0727	0.0413	2.817e+08	1.372e+10

Figure B 1 - DiD Regression Output: GDP (Sydney 2000 Olympics)

PanelOLS Estimation Summary

Dep. Variable:	FDI	R-squared:	0.0894
Estimator:	PanelOLS	R-squared (Between):	0.4767
No. Observations:	105	R-squared (Within):	0.1476
Date:	Tue, Aug 19 2025	R-squared (Overall):	0.4007
Time:	13:56:14	Log-likelihood	-2712.9
Cov. Estimator:	Clustered		
		F-statistic:	4.0240
Entities:	7	P-value	0.0215
Avg Obs:	15.000	Distribution:	F(2,82)
Min Obs:	15.000		
Max Obs:	15.000	F-statistic (robust):	50.444
		P-value	0.0000
Time periods:	15	Distribution:	F(2,82)
Avg Obs:	7.0000		
Min Obs:	7.0000		
Max Obs:	7.0000		

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
FDI_lag1	0.2933	0.0550	5.3361	0.0000	0.1840	0.4027
DID	-5.733e+08	5.478e+09	-0.1047	0.9169	-1.147e+10	1.032e+10

Figure B 2 - DiD Regression Output: FDI (Sydney 2000 Olympics)

PanelOLS Estimation Summary

Dep. Variable:	IT	R-squared:	0.6586
Estimator:	PanelOLS	R-squared (Between):	0.9660
No. Observations:	105	R-squared (Within):	0.6532
Date:	Tue, Aug 19 2025	R-squared (Overall):	0.9218
Time:	14:00:57	Log-likelihood	-1839.6
Cov. Estimator:	Clustered		
		F-statistic:	79.102
Entities:	7	P-value	0.0000
Avg Obs:	15.000	Distribution:	F(2,82)
Min Obs:	15.000		
Max Obs:	15.000	F-statistic (robust):	2192.4
		P-value	0.0000
Time periods:	15	Distribution:	F(2,82)
Avg Obs:	7.0000		
Min Obs:	7.0000		
Max Obs:	7.0000		

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
IT_lag1	0.8525	0.0212	40.257	0.0000	0.8104	0.8947
DID	-1.52e+06	2.582e+06	-0.5887	0.5577	-6.657e+06	3.617e+06

Figure B 3 - DiD Regression Output: IT (Sydney 2000 Olympics)

PanelOLS Estimation Summary

Dep. Variable:	GDP	R-squared:	0.9991
Estimator:	PanelOLS	R-squared (Between):	0.9993
No. Observations:	100	R-squared (Within):	0.9992
Date:	Tue, Aug 19 2025	R-squared (Overall):	0.9993
Time:	13:34:58	Log-likelihood	-2581.9
Cov. Estimator:	Clustered		
		F-statistic:	4.154e+04
Entities:	5	P-value	0.0000
Avg Obs:	20.000	Distribution:	F(2,74)
Min Obs:	20.000		
Max Obs:	20.000	F-statistic (robust):	4.849e+05
		P-value	0.0000
Time periods:	20	Distribution:	F(2,74)
Avg Obs:	5.0000		
Min Obs:	5.0000		
Max Obs:	5.0000		

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
GDP_lag1	1.0496	0.0011	925.15	0.0000	1.0473	1.0518
DID	6.728e+10	1.078e+10	6.2411	0.0000	4.58e+10	8.876e+10

Figure B 4 - DiD Regression Output: GDP (Beijing 2008 Olympics)

PanelOLS Estimation Summary

Dep. Variable:	FDI	R-squared:	0.8008
Estimator:	PanelOLS	R-squared (Between):	0.9411
No. Observations:	100	R-squared (Within):	0.8149
Date:	Tue, Aug 19 2025	R-squared (Overall):	0.9121
Time:	13:51:01	Log-likelihood	-2483.1
Cov. Estimator:	Clustered		
		F-statistic:	148.74
Entities:	5	P-value	0.0000
Avg Obs:	20.000	Distribution:	F(2,74)
Min Obs:	20.000		
Max Obs:	20.000	F-statistic (robust):	5720.4
		P-value	0.0000
Time periods:	20	Distribution:	F(2,74)
Avg Obs:	5.0000		
Min Obs:	5.0000		
Max Obs:	5.0000		

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
FDI_lag1	0.6439	0.0215	30.017	0.0000	0.6012	0.6867
DID	4.531e+10	4.555e+09	9.9470	0.0000	3.623e+10	5.438e+10

Figure B 5 - DiD Regression Output: FDI (Beijing 2008 Olympics)

PanelOLS Estimation Summary

Dep. Variable:	IT	R-squared:	0.9144
Estimator:	PanelOLS	R-squared (Between):	0.9858
No. Observations:	100	R-squared (Within):	0.9368
Date:	Tue, Aug 19 2025	R-squared (Overall):	0.9840
Time:	13:57:53	Log-likelihood	-1607.7
Cov. Estimator:	Clustered		
		F-statistic:	395.05
Entities:	5	P-value	0.0000
Avg Obs:	20.000	Distribution:	F(2,74)
Min Obs:	20.000		
Max Obs:	20.000	F-statistic (robust):	4155.9
		P-value	0.0000
Time periods:	20	Distribution:	F(2,74)
Avg Obs:	5.0000		
Min Obs:	5.0000		
Max Obs:	5.0000		

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
IT_lag1	0.9311	0.0173	53.944	0.0000	0.8967	0.9655
DID	-2.998e+06	6.576e+05	-4.5597	0.0000	-4.308e+06	-1.688e+06

Figure B 6 - DiD Regression Output: IT (Beijing 2008 Olympics)

PanelOLS Estimation Summary

Dep. Variable:	GDP	R-squared:	0.9788
Estimator:	PanelOLS	R-squared (Between):	0.9939
No. Observations:	100	R-squared (Within):	0.9894
Date:	Tue, Aug 19 2025	R-squared (Overall):	0.9937
Time:	13:44:04	Log-likelihood	-2378.8
Cov. Estimator:	Clustered		
		F-statistic:	1705.6
Entities:	5	P-value	0.0000
Avg Obs:	20.000	Distribution:	F(2,74)
Min Obs:	20.000		
Max Obs:	20.000	F-statistic (robust):	1082.9
		P-value	0.0000
Time periods:	20	Distribution:	F(2,74)
Avg Obs:	5.0000		
Min Obs:	5.0000		
Max Obs:	5.0000		

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
GDP_lag1	0.9587	0.0244	39.222	0.0000	0.9100	1.0074
DID	-5.802e+09	9.836e+08	-5.8984	0.0000	-7.761e+09	-3.842e+09

Figure B 7 - DiD Regression Output: GDP (South Africa 2010 World Cup)

PanelOLS Estimation Summary

Dep. Variable:	FDI	R-squared:	0.2762
Estimator:	PanelOLS	R-squared (Between):	0.7069
No. Observations:	100	R-squared (Within):	0.3662
Date:	Tue, Aug 19 2025	R-squared (Overall):	0.6117
Time:	13:55:45	Log-likelihood	-2262.0
Cov. Estimator:	Clustered		
		F-statistic:	14.120
Entities:	5	P-value	0.0000
Avg Obs:	20.000	Distribution:	F(2,74)
Min Obs:	20.000		
Max Obs:	20.000	F-statistic (robust):	13.255
		P-value	0.0000
Time periods:	20	Distribution:	F(2,74)
Avg Obs:	5.0000		
Min Obs:	5.0000		
Max Obs:	5.0000		

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
FDI_lag1	0.5064	0.1615	3.1366	0.0025	0.1847	0.8281
DID	-9.034e+08	4.05e+08	-2.2304	0.0288	-1.71e+09	-9.632e+07

Figure B 8 - DiD Regression Output: FDI (South Africa 2010 World Cup)

PanelOLS Estimation Summary

Dep. Variable:	IT	R-squared:	0.6869
Estimator:	PanelOLS	R-squared (Between):	0.9061
No. Observations:	90	R-squared (Within):	0.7185
Date:	Tue, Aug 19 2025	R-squared (Overall):	0.8891
Time:	14:00:18	Log-likelihood	-1366.8
Cov. Estimator:	Clustered		
		F-statistic:	72.395
Entities:	5	P-value	0.0000
Avg Obs:	18.000	Distribution:	F(2,66)
Min Obs:	18.000		
Max Obs:	18.000	F-statistic (robust):	921.96
		P-value	0.0000
Time periods:	18	Distribution:	F(2,66)
Avg Obs:	5.0000		
Min Obs:	5.0000		
Max Obs:	5.0000		

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
IT_lag1	0.6641	0.0347	19.120	0.0000	0.5948	0.7335
DID	2.367e+06	2.548e+05	9.2900	0.0000	1.858e+06	2.876e+06

Figure B 9 - DiD Regression Output: IT (South Africa 2010 World Cup)

PanelOLS Estimation Summary

Dep. Variable:	GDP	R-squared:	0.7836
Estimator:	PanelOLS	R-squared (Between):	0.9767
No. Observations:	100	R-squared (Within):	0.8456
Date:	Tue, Aug 19 2025	R-squared (Overall):	0.9760
Time:	13:42:05	Log-likelihood	-2579.5
Cov. Estimator:	Clustered		
		F-statistic:	134.00
Entities:	5	P-value	0.0000
Avg Obs:	20.000	Distribution:	F(2,74)
Min Obs:	20.000		
Max Obs:	20.000	F-statistic (robust):	377.62
		P-value	0.0000
Time periods:	20	Distribution:	F(2,74)
Avg Obs:	5.0000		
Min Obs:	5.0000		
Max Obs:	5.0000		

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
GDP_lag1	0.8562	0.0811	10.553	0.0000	0.6945	1.0179
DID	3.375e+10	1.955e+10	1.7264	0.0884	-5.203e+09	7.271e+10

Figure B 10 - DiD Regression Output: GDP (London 2012 Olympics)

PanelOLS Estimation Summary

Dep. Variable:	FDI	R-squared:	0.2194
Estimator:	PanelOLS	R-squared (Between):	0.7272
No. Observations:	100	R-squared (Within):	0.2355
Date:	Tue, Aug 19 2025	R-squared (Overall):	0.4306
Time:	13:53:52	Log-likelihood	-2663.0
Cov. Estimator:	Clustered		
		F-statistic:	10.398
Entities:	5	P-value	0.0001
Avg Obs:	20.000	Distribution:	F(2,74)
Min Obs:	20.000		
Max Obs:	20.000	F-statistic (robust):	18.030
		P-value	0.0000
Time periods:	20	Distribution:	F(2,74)
Avg Obs:	5.0000		
Min Obs:	5.0000		
Max Obs:	5.0000		

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
FDI_lag1	0.4722	0.0843	5.6047	0.0000	0.3043	0.6401
DID	4.735e+09	3.444e+10	0.1375	0.8910	-6.388e+10	7.335e+10

Figure B 11 - DiD Regression Output: FDI (London 2012 Olympics)

PanelOLS Estimation Summary

Dep. Variable:	IT	R-squared:	0.3860
Estimator:	PanelOLS	R-squared (Between):	0.7084
No. Observations:	90	R-squared (Within):	0.3773
Date:	Tue, Aug 19 2025	R-squared (Overall):	0.6866
Time:	13:59:17	Log-likelihood	-1612.5
Cov. Estimator:	Clustered		
		F-statistic:	20.749
Entities:	5	P-value	0.0000
Avg Obs:	18.000	Distribution:	F(2,66)
Min Obs:	18.000		
Max Obs:	18.000	F-statistic (robust):	1.486e+04
		P-value	0.0000
Time periods:	18	Distribution:	F(2,66)
Avg Obs:	5.0000		
Min Obs:	5.0000		
Max Obs:	5.0000		

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
IT_lag1	0.4757	0.0029	162.42	0.0000	0.4698	0.4815
DID	-5.298e+05	9.754e+05	-0.5431	0.5889	-2.477e+06	1.418e+06

Figure B 12 - DiD Regression Output: IT (London 2012 Olympics)

PanelOLS Estimation Summary

Dep. Variable:	GDP	R-squared:	0.9316
Estimator:	PanelOLS	R-squared (Between):	0.9973
No. Observations:	100	R-squared (Within):	0.9513
Date:	Tue, Aug 19 2025	R-squared (Overall):	0.9965
Time:	13:40:06	Log-likelihood	-2504.3
Cov. Estimator:	Clustered		
		F-statistic:	504.01
Entities:	5	P-value	0.0000
Avg Obs:	20.000	Distribution:	F(2,74)
Min Obs:	20.000		
Max Obs:	20.000	F-statistic (robust):	1427.1
		P-value	0.0000
Time periods:	20	Distribution:	F(2,74)
Avg Obs:	5.0000		
Min Obs:	5.0000		
Max Obs:	5.0000		

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
GDP_lag1	0.9705	0.0274	35.374	0.0000	0.9158	1.0251
DID	-4.662e+10	8.274e+09	-5.6351	0.0000	-6.311e+10	-3.014e+10

Figure B 13 - DiD Regression Output: GDP (Brazil 2014 World Cup)

PanelOLS Estimation Summary

Dep. Variable:	FDI	R-squared:	0.4739
Estimator:	PanelOLS	R-squared (Between):	0.8888
No. Observations:	100	R-squared (Within):	0.5474
Date:	Tue, Aug 19 2025	R-squared (Overall):	0.8210
Time:	13:52:52	Log-likelihood	-2421.0
Cov. Estimator:	Clustered		
		F-statistic:	33.327
Entities:	5	P-value	0.0000
Avg Obs:	20.000	Distribution:	F(2,74)
Min Obs:	20.000		
Max Obs:	20.000	F-statistic (robust):	2071.0
		P-value	0.0000
Time periods:	20	Distribution:	F(2,74)
Avg Obs:	5.0000		
Min Obs:	5.0000		
Max Obs:	5.0000		

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
FDI_lag1	0.6570	0.1118	5.8766	0.0000	0.4343	0.8798
DID	3.219e+09	3.067e+09	1.0494	0.2974	-2.893e+09	9.33e+09

Figure B 14 - DiD Regression Output: FDI (Brazil 2014 World Cup)

PanelOLS Estimation Summary

Dep. Variable:	IT	R-squared:	0.3554
Estimator:	PanelOLS	R-squared (Between):	0.9470
No. Observations:	100	R-squared (Within):	0.2456
Date:	Tue, Aug 19 2025	R-squared (Overall):	0.9335
Time:	13:58:42	Log-likelihood	-1659.0
Cov. Estimator:	Clustered		
		F-statistic:	20.398
Entities:	5	P-value	0.0000
Avg Obs:	20.000	Distribution:	F(2,74)
Min Obs:	20.000		
Max Obs:	20.000	F-statistic (robust):	3168.2
		P-value	0.0000
Time periods:	20	Distribution:	F(2,74)
Avg Obs:	5.0000		
Min Obs:	5.0000		
Max Obs:	5.0000		

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
IT_lag1	0.7469	0.0095	78.641	0.0000	0.7280	0.7658
DID	1.598e+05	5.764e+05	0.2773	0.7823	-9.887e+05	1.308e+06

Figure B 15 - DiD Regression Output: IT (Brazil 2014 World Cup)

PanelOLS Estimation Summary

Dep. Variable:	GDP	R-squared:	0.9320
Estimator:	PanelOLS	R-squared (Between):	0.9980
No. Observations:	114	R-squared (Within):	0.9551
Date:	Tue, Aug 19 2025	R-squared (Overall):	0.9968
Time:	13:42:58	Log-likelihood	-2863.6
Cov. Estimator:	Clustered		
		F-statistic:	602.71
Entities:	6	P-value	0.0000
Avg Obs:	19.000	Distribution:	F(2,88)
Min Obs:	19.000		
Max Obs:	19.000	F-statistic (robust):	525.79
		P-value	0.0000
Time periods:	19	Distribution:	F(2,88)
Avg Obs:	6.0000		
Min Obs:	6.0000		
Max Obs:	6.0000		

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
GDP_lag1	0.9871	0.0689	14.328	0.0000	0.8502	1.1241
DID	-8.009e+09	6.597e+09	-1.2142	0.2279	-2.112e+10	5.1e+09

Figure B 16 - DiD Regression Output: GDP (Russia 2018 World Cup)

PanelOLS Estimation Summary

Dep. Variable:	FDI	R-squared:	0.3468
Estimator:	PanelOLS	R-squared (Between):	0.1498
No. Observations:	114	R-squared (Within):	0.3241
Date:	Tue, Aug 19 2025	R-squared (Overall):	0.2117
Time:	13:55:02	Log-likelihood	-2773.5
Cov. Estimator:	Clustered		
		F-statistic:	23.358
Entities:	6	P-value	0.0000
Avg Obs:	19.000	Distribution:	F(2,88)
Min Obs:	19.000		
Max Obs:	19.000	F-statistic (robust):	96.808
		P-value	0.0000
Time periods:	19	Distribution:	F(2,88)
Avg Obs:	6.0000		
Min Obs:	6.0000		
Max Obs:	6.0000		

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
FDI_lag1	0.2530	0.0836	3.0270	0.0032	0.0869	0.4192
DID	-2.82e+10	2.296e+09	-12.279	0.0000	-3.276e+10	-2.363e+10

Figure B 17 - DiD Regression Output: FDI (Russia 2018 World Cup)

PanelOLS Estimation Summary

Dep. Variable:	IT	R-squared:	0.0453
Estimator:	PanelOLS	R-squared (Between):	0.4770
No. Observations:	96	R-squared (Within):	0.0393
Date:	Tue, Aug 19 2025	R-squared (Overall):	0.4433
Time:	13:59:44	Log-likelihood	-1647.6
Cov. Estimator:	Clustered		
		F-statistic:	1.7321
Entities:	6	P-value	0.1841
Avg Obs:	16.000	Distribution:	F(2,73)
Min Obs:	16.000		
Max Obs:	16.000	F-statistic (robust):	2.5532
		P-value	0.0848
Time periods:	16	Distribution:	F(2,73)
Avg Obs:	6.0000		
Min Obs:	6.0000		
Max Obs:	6.0000		

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
IT_lag1	0.2679	0.1449	1.8491	0.0685	-0.0208	0.5566
DID	-4.333e+06	2.578e+06	-1.6806	0.0971	-9.471e+06	8.055e+05

Figure B 18 - DiD Regression Output: IT (Russia 2018 World Cup)

Appendix C – Panel Regression Outputs

PanelOLS Estimation Summary

Dep. Variable:	GDP	R-squared:	0.0542
Estimator:	PanelOLS	R-squared (Between):	0.7286
No. Observations:	336	R-squared (Within):	0.0377
Date:	Thu, Sep 11 2025	R-squared (Overall):	0.4573
Time:	15:05:29	Log-likelihood	-652.18
Cov. Estimator:	Clustered		
		F-statistic:	2.3899
Entities:	14	P-value	0.0217
Avg Obs:	24.000	Distribution:	F(7,292)
Min Obs:	24.000		
Max Obs:	24.000	F-statistic (robust):	1.6156
		P-value	0.1305
Time periods:	24	Distribution:	F(7,292)
Avg Obs:	14.000		
Min Obs:	13.000		
Max Obs:	15.000		

Figure C 1 - Panel Regression Estimation Summary

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
Inflation	-0.1036	0.1066	-0.9716	0.3321	-0.3135	0.1063
Trade	0.0263	0.0177	1.4840	0.1389	-0.0086	0.0611
Gross Fixed Capital Formation	0.0801	0.0459	1.7465	0.0818	-0.0102	0.1703
Host_Event	-0.3655	0.9160	-0.3990	0.6902	-2.1683	1.4373
Event_post_lag1	0.0793	1.3350	0.0594	0.9526	-2.5480	2.7067
Event_post_lag2	0.4670	0.7408	0.6304	0.5289	-0.9909	1.9249
Event_cumulative	-0.8059	0.4942	-1.6307	0.1040	-1.7786	0.1667

F-test for Poolability: 16.215
P-value: 0.0000
Distribution: F(36,292)

Included effects: Entity, Time

Figure C 2 - Panel Regression Parameter Estimates

Shapiro-Wilk statistic: 0.9704764131626333 p-value: 2.3509011504784046e-06

	VIF	variable
0	1.047730	Inflation
1	1.159682	Trade
2	1.026088	Gross Fixed Capital Formation
3	1.101226	Host_Event
4	1.117202	Event_post_lag1
5	1.134567	Event_post_lag2
6	1.489433	Event_cumulative
7	24.879154	const

Figure C 3 - Residual Normality Test (Shapiro-Wilk) and Variance Inflation Factors (VIFs)

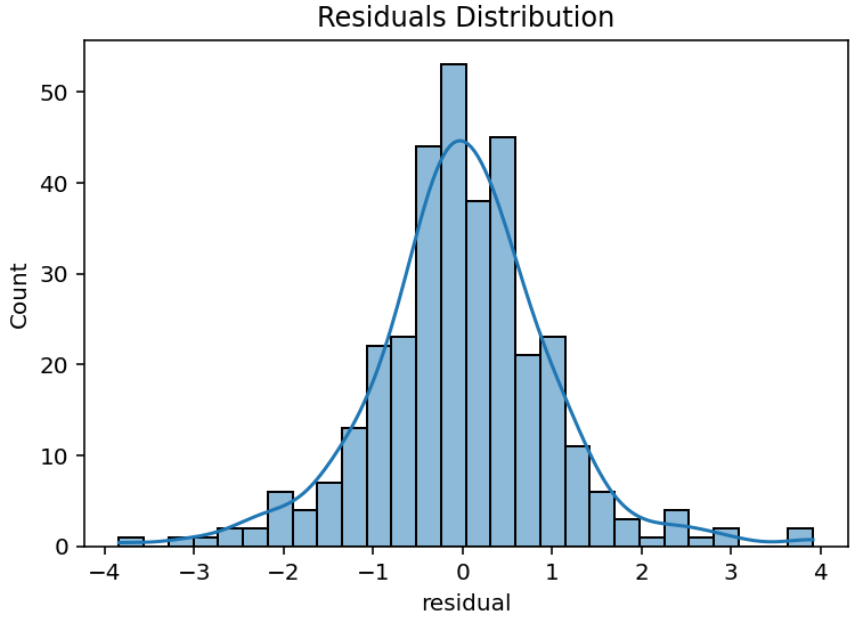

Figure C 4 - Residual Distribution Plot

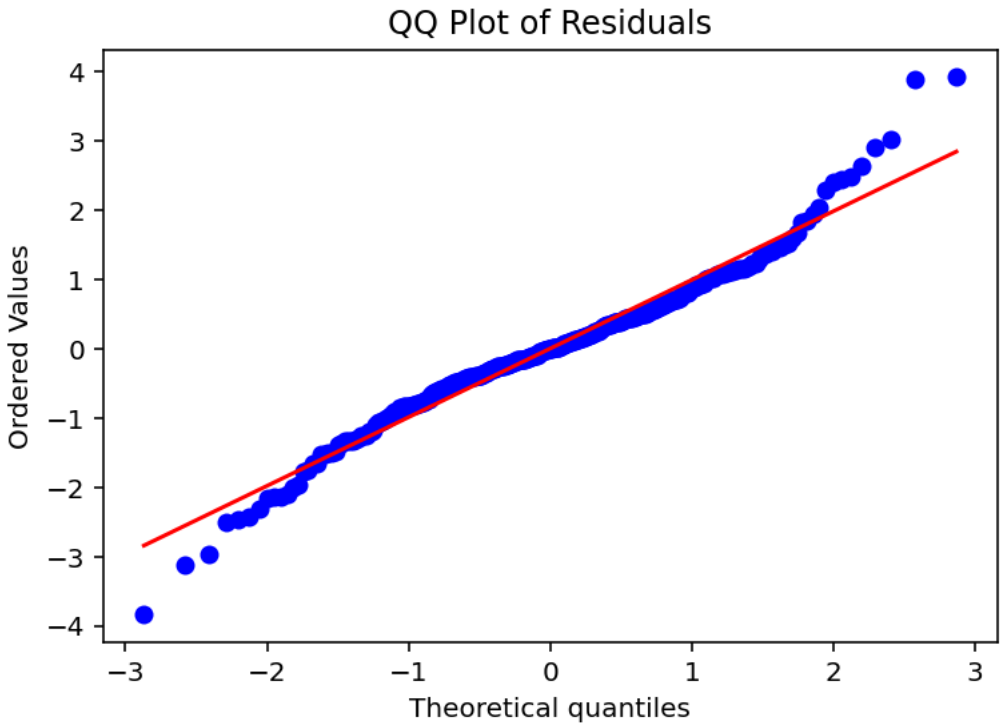

Figure C 5 - QQ Plot of Residuals